

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW  
Edition : 03.94  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/9FZ300R433-12  
Type number : 0 460 494 347  
Customer Part-No. :

Customer-specific information  
Customer : VW

Engine : 1,9 L UD A3

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250  
Charge press. hPa: 750  
Setting value mm: 4.30...4.50  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250  
Charge press hPa: 750  
Setting value bar: 5.40...6.00  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250  
Charge press. hPa: 750  
Del. quantity cm3/  
1000S.: 50.00...51.00

Shutoff  
electromagnet Volt: 12  
Dispersion cm3/: 2.5  
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 450  
Del. quantity cm3/  
1000S.: 37.20...43.20

Shutoff  
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 450  
Del. quantity cm3/  
1000S.: 16.00...18.00

Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 2.0

Residual-Delivery Setting

Speed 1/min: 550  
Del. quantity cm3/  
1000S.: 7.00...8.00

Shutoff  
electromagnet Volt: 12  
Dispersion cm3/: 2.0  
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2600  
Charge press hPa: 750  
Del. quantity cm3/  
1000S.: 9.00...13.00

Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm3/: 37.00...43.00  
mind 1000S.: 37.0

Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1250  
Inj.-qty. cm3/  
difference 1000S.: -7.0...-11.0 #  
Shutoff  
electromagnet Volt: 12  
TD-travel dif.measurement  
correttore anticipo iniezione (SV)  
1.Speed 1/min: 1250  
TD-travel  
difference mm: -1.9...-2.1 #  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2100  
Charge press hPa: 750  
TD travel mm: 8.00...8.60  
mm: (7.50...9.10)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
Charge press hPa: 750  
TD travel mm: 4.30...4.50  
mm: (3.60...5.20)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 750  
Charge press hPa: 750  
TD travel mm: 1.50...2.10  
mm: (1.00...2.60)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 4.30...4.90  
Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1250  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 5.40...6.00  
Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 2100  
Charge press. hPa: 750

Supply-pump  
pressure bar: 7.40...8.00  
Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 700  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Overflow : 41.70...83.40  
quantity cm3/10s: (26.70...98.30)  
2nd speed 1/min: 2100  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Overflow : 55.60...152.90  
quantity cm3/10s: (40.60...167.90)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2750  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 0.00...3.00  
1000S.: (0.00...3.00)  
5th speed 1/min: 2600  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 9.00...13.00  
1000S.: (7.00...15.00)  
8th speed 1/min: 2400  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 32.50...42.50  
1000S.: (31.50...43.50)  
9th speed 1/min: 2100  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 42.00...44.00  
1000S.: (40.80...45.20)  
12th speed 1/min: 1250  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 50.00...51.00  
1000S.: (48.30...52.70)  
20th speed 1/min: 700  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 43.50...46.50  
1000S.: (42.80...47.20)  
21th speed 1/min: 450



Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 37.20...43.20  
1000s.: (34.70...45.70)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000s.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Damper set qty.:

LFG-setting:  
solidale con carcassa:  
Idle delivery:

1st speed 1/min: 450  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 16.00...18.00  
1000s.: (13.00...21.00)

High Idle:

1st speed 1/mi: 550  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 16.00...18.00  
1000s.: (13.00...21.00)

Residual:

1. Rotacao 1/min: 550  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 7.00...8.00  
1000s.: (5.50...9.50)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1250  
Inj.-qty. cm<sup>3</sup>/: -4.5...-6.5 "  
difference 1000s.: -  
Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1250  
Inj.-qty. cm<sup>3</sup>/: 0.0...+3.0 Z'  
difference 1000s.: -  
Shutoff  
electromagnet Volt: 12

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):

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1st speed 1/min: 1250  
TD-travel : -2.5...2.9 "  
difference mm: -  
Shutoff  
electromagnet Volt: 12

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1250  
Supply pump-  
pressure : -0.1...-0.3 "  
difference bar: -  
Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1250  
Supply pump-  
pressure : -1.0...-1.4 "  
difference bar: -  
Shutoff  
electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.  
terza fermo della portata  
stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)  
Spacing mm: 12.0

1st speed 1/min: 1000  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 34.00...36.00  
1000s.: (32.00...38.00)

Automatic starting fuel delivery:

1st speed 1/min: 180  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35.00...55.00  
1000s.: (35.00...55.00)

2nd speed 1/min: 380  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 31.00...51.00  
1000s.: (31.00...51.00)

3rd speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 37.00...43.00  
1000s.: (32.50...47.50)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.6...3.8
KF	mm: KOT
MS	mm: 1.1...1.5
LDA stroke	mm: -
XK	mm: LP=0.8..3.0
Ya	mm: 37.6...41.6
Yb	mm: 50.4...63.3

Remarks:

Ya = Distance between VE flange and speed-control lever in idle position

Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor-head end

Z = Absolute delivery

Pump in stepped LDA

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW  
Edition : 03.94  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/9F2000R569  
Type number : 0 460 494 352  
Customer Part-No. :

Customer-specific information  
Customer : VW

Engine : 028.Z JG5 1.9 l

### TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

### Timing-device travel

Speed 1/min: 1500  
Charge press. hPa: 750  
Setting value mm: 4.30...4.70  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

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Speed 1/min: 1500  
Charge press hPa: 750  
Setting value bar: 6.90...7.50  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500  
Charge press. hPa: 750  
Del. quantity cm3/  
1000S.: 47.50...48.50

Shutoff  
electromagnet Volt: 12  
Dispersion cm3/: 2.5  
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 750  
Del. quantity cm3/  
1000S.: 37.00...38.00

Shutoff  
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 475  
Del. quantity cm3/  
1000S.: 6.50...8.50

Shutoff  
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2160  
Charge press hPa: 750  
Del. quantity cm3/  
1000S.: 10.00...14.00

Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm3/: 35.00...65.00  
mind 1000S.: 35.00

Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000  
Charge press hPa: 750  
TD travel mm: 6.70...7.50  
mm: (6.40...7.80)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1500  
Charge press hPa: 750  
TD travel mm: 4.30...4.70  
mm: (3.80...5.20)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 900  
Charge press hPa: 750  
TD travel mm: 1.10...1.90  
mm: (0.80...2.20)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2000  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 8.10...8.70

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1500  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 6.90...7.50

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 900  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 5.50...6.10

Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 750  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (26.70...98.40)

2nd speed 1/min: 2000  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Overflow : 55.60...139.00  
quantity cm<sup>3</sup>/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 900  
Charge-air pressure-setting  
point hPa: 250  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 41.00...42.00  
1000S.: (38.50...44.50)

2nd speed 1/min: 2190  
Charge press. hPa: 750

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

4th speed 1/min: 2150  
Charge press. hPa: 750

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 12.00...32.00  
1000S.: (12.00...32.00)

5th speed 1/min: 2160  
Charge press. hPa: 750

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 10.00...14.00  
1000S.: (6.00...18.00)

6th speed 1/min: 2170  
Charge press. hPa: 750

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...12.00  
1000S.: (0.00...12.00)

8th speed 1/min: 2140  
Charge press. hPa: 750

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 22.00...38.00  
1000S.: (20.00...40.00)

9th speed 1/min: 2000  
Charge press. hPa: 750

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 42.00...44.00  
1000S.: (40.80...45.20)

12th speed 1/min: 1500  
Charge press. hPa: 750

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 47.50...48.50  
1000S.: (45.80...50.20)

15th speed 1/min: 900  
Charge press. hPa: 750

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 41.00...42.00  
1000S.: (38.50...44.50)

18th speed 1/min: 750  
Charge press. hPa: -

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 37.00...38.00  
1000S.: (34.50...40.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 475  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 475  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 6.50...8.50  
1000S.: (3.50...11.50)  
2nd speed 1/min: 700  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 230  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 45.00...85.00  
1000S.: (45.00...85.00)

2nd speed 1/min: 340  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 20.00...40.00  
1000S.: (20.00...40.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35.00...65.00  
1000S.: (35.00...65.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 3.2...3.4  
KF mm: KOT  
MS mm: 1.0...1.4  
Ya mm: 38.6...40.6  
Yb mm: 66.0...76.0

Remarks:

Ya = Distance between VE flange and  
speed-control lever in idle  
position

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Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position

Measurement point = edge of control  
lever on distributor-head end

Permissible port/port scatter with  
stop test, electrical = max. 5.0  
ccm/1000 S.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 30.03.94  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 074 885  
  
Injection pump  
Pump designation : PES4M55C320RS167  
EP type number : 0 410 054 960  
Governor  
Governor design. : RSF375/2000M56-14  
Governor no. : 0 420 021 271

Customer-spec. information  
Customer : MB-PKW

Engine : OM601

1st version kW : 58.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 1 688 901 111

Opening  
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10  
                  : (1.95...2.15)  
Rack travel in mm : 20.00...22.00  
Firing order : 1- 3- 4- 2

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Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 3.8...3.9

100 s: (3.7...4.0)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 5.1...5.3

Del.quantity cm3/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm3 : 0.1

100 s: (0.1)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 38.0...39.0

1000 : (37.0...40.0)

Spread cm3 : 2.50

1000 : (3.00)

## RATED SPEED

1st version

Control lever  
position degrees: 50...0

3rd rack travel in: 8.65...9.15

Speed rpm : 2200

4th rack travel in: 2550

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.40...1.50

## LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 375

### Testing:

```
Speed          rpm      : 250
Minimum rack trave: 10.20
Speed          rpm      : 375
Rack travel in mm : 5.10...5.30
Speed          rpm      : 1000
Maximum rack trave: 1.45
```

SET IDLE AUXILIARY SPRING

```
Speed      rpm      : 450
Rack travel in mm : 3.80...4.00
                  : (3.70...4.10)
```

## TORQUE CONTROL

```
Torque control curve - 1st version
1st speed   rpm   : 1000
  Rack travel in m: 12.10...12.20
2nd speed   rpm   : 1800
  Rack travel in m: 11.80...12.00
3rd speed   rpm   : 2000
  Rack travel in m: 11.70...11.90
```

## Aneroid/Altitude Compensator Test

1st version

```
Setting
Speed      rpm      : 1000
Pressure    hPa      : 940
Rack travel mm : 0.00...0.20
```

## Measurement

Speed 1/min : 1000

```
1st pressure hPa : 900
  Rack travel in m: 0.30...0.50
2nd pressure hPa : 750
  Rack travel in m: 1.40...1.80
```

## FUEL DELIVERY CHARACTERISTICS

1st version

```

Speed          rpm      : 1800
Del.quantity   cm3/     : 40.0...41.6
                1000 s: (39.0...42.6)
Spread         cm3      : 2.50
                1000 s: (3.0)
Speed          rpm      : 2000
Del.quantity   cm3/     : 40.0...42.0
                1000 s: (39.0...43.0)
Spread         cm3      : 2.50
                1000 s: (3.00)

```

STARTING FUEL DELIVERY

```
Speed          rpm      : 100
Del.quantity   cm3/     : 54.0...0.0
                1000 s: (54.0...0.0)
Rack travel    in mm    : 20.10...0.00
```

HIGH IDLE

```
1st version
Speed      rpm      : 2200
Del.quantity cm3/    : 29.0...33.0
            1000 s: (28.0...34.0)
Spread     cm3      : 2.50
            1000 s: (3.00)
```

LOW IDLE

```
Speed      rpm      : 375
Rack travel in mm : 5.10...5.30
Del.quantity cm3/   : 6.0...7.0
            1000 s : (5.5...10.0)
Spread     cm3      : 1.00
            1000 s : (1.50)
```

SETTING PNEUMATIC FAST IDLE  
(ELA)

```
Speed      rpm      : 425
Rack travel in mm : 6.50...8.10
Del.quantity cm3/  : 12.00...20.00
              1000 s: -
Vacuum      hPa     : 400
```

Remarks:

Sliding sleeve pre-travel = 6.25 mm

## TESTING PNEUMATIC SHUTOFF DEVICE

With  $n = 375$  /min. and  $p_u = 450$  mbar,  
control rod must move quickly to  
control-rod travel = 0 mm

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 =  $15.3^{\circ} \dots 15.7^{\circ}$   
( $15.2 \dots 15.8^{\circ}$ ) angular displacement of  
cam following start of delivery of  
cylinder no. 1.

Difference in start of delivery between  
max. and min. value = max.  $1^\circ$  angular  
displacement of cam

## CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position  $49^\circ$ , max.

0.2 mm control-rod travel deduction  
allowable after switchover point (of  
starting cam) up to 1000 1/min.  
Control-lever position  $46.5^\circ$ ,  
control-rod travel deduction must be  
greater than 0.2 mm after switchover  
point (of starting cam).



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 09.05.94  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 074 889  
  
Injection pump  
Pump designation : PES4M55C32ORS172  
EP type number : 0 410 054 958  
Governor  
Governor design. : RSF375/2300M75-2  
Governor no. : 0 420 021 166

Customer-spec. information  
Customer : MB-PKW

Engine : OM601

1st version kW : 53.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 1 688 901 111

Opening  
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80  
: (1.65...1.85)

Rack travel in mm : 20.00...22.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.30...12.40

Del.quantity cm<sup>3</sup>/ : 3.3...3.4

100 s: (3.2...3.5)

Spread cm<sup>3</sup> : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.4...6.6

Del.quantity cm<sup>3</sup>/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm<sup>3</sup> : 0.1

100 s: (0.1)

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 33.0...34.0

1000 : (32.0...35.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.20...8.60

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.40...1.50

## LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring



Control-lever position  $46.5^\circ$ ,  
control-rod travel deduction must be  
greater than 0.2 mm after switchover  
point (of starting cam).

Difference in start of delivery between  
max. and min. value = max.  $1^\circ$  angular  
displacement of cam

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 =  $16.8^\circ \dots 17.2^\circ$   
( $16.7 \dots 17.3^\circ$ ) angular displacement of  
cam following start of delivery of  
cylinder no. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 30.03.94  
Replaces : 18.12.92  
Test oil : ISO-4113

Combination no. : 0 400 074 890

Injection pump  
Pump designation : PES4M55C320RS183  
EP type number : 0 410 054 955  
Governor  
Governor design. : RSF375/2300M75-1  
Governor no. : 0 420 021 163

Customer spec. information  
Customer : MB

Engine : OM601-ECE

1st version kW : 55.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 1 688 901 111

Opening  
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80  
: (1.65...1.85)  
Rack travel in mm : 20.00...22.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.90...13.00

Del. quantity cm3/ : 3.6...3.7

100 s: (3.5...3.8)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.7...6.9

Del. quantity cm3/ : 0.6...0.7

100 s: (0.55...1.00)

Spread cm3 : 0.1

100 s: (0.15)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 36.0...37.0

1000 : (35.0...38.0)

Spread cm3 : 2.50

1000 : (3.00)

## RATED SPEED

1st version

Control lever  
position degrees: 50...0

3rd rack travel in: 8.80...9.20

Speed rpm : 2500

4th rack travel in: 2900

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.90...2.00

## LOW IDLE 1

Control lever  
position degrees: 12...14

Setting point w/out bumper spring

Speed rpm : 375  
Rack travel in mm : 6.8

#### Testing:

Speed rpm : 250  
Minimum rack travel: 11.00  
Speed rpm : 375  
Rack travel in mm : 6.70...6.90  
Rack travel in mm : 3.00  
Speed rpm : 650...750  
Speed rpm : 1000  
Maximum rack travel: 1.95

#### SET IDLE AUXILIARY SPRING

Speed rpm : 500  
Rack travel in mm : 4.90...5.10  
: (4.80...5.20)

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.90...13.00  
2nd speed rpm : 1600  
Rack travel in m: 12.40...12.60  
3rd speed rpm : 2300  
Rack travel in m: 11.70...11.90

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 940  
Rack travel mm : 0.00...0.20

#### Measurement

Speed 1/min : 1000

1st pressure hPa : 900  
Rack travel in m: 0.30...0.50  
2nd pressure hPa : 750  
Rack travel in m: 1.40...1.80

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 1600  
Del.quantity cm3/ : 36.0...37.5  
1000 s: (35.0...38.5)  
Spread cm3 : 2.50  
1000 s: (3.0)  
Aneroid pressure h: 1100  
Speed rpm : 2300  
Del.quantity cm3/ : 36.0...38.0  
1000 s: (35.0...39.0)

Spread cm3 : 2.50  
1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 54.0...0.0  
1000 s: (54.0...0.0)  
Rack travel in mm : 20.10...0.00

#### HIGH IDLE

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 2500  
Rack travel in mm : 8.80...9.20  
Del.quantity cm3/ : 22.0...26.0  
1000 s: (21.0...27.0)  
Spread cm3 : 2.50  
1000 s: (3.00)

#### LOW IDLE

Speed rpm : 375  
Rack travel in mm : 6.70...6.90  
Del.quantity cm3/ : 6.0...7.0  
1000 s: (5.5...10.0)  
Spread cm3 : 1.00  
1000 s: (1.50)

#### SETTING PNEUMATIC FAST IDLE (ELA)

Speed rpm : 425  
Rack travel in mm : 8.20...9.80  
Del.quantity cm3/ : 13.0...21.0  
1000 s: -  
Vacuum hPa : 400

#### Remarks:

: FB = 16°

: ARD= - 1,55 mm

Sliding sleeve pre-travel = 6.5 mm

#### TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.  
With n = 375 1/min. and pu = 450 mbar,  
control rod must move quickly to  
control-rod travel = 0 mm

#### CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.  
0.2 mm control-rod travel deduction  
allowable after switchover point (of  
starting cam) up to 1000 1/min.

Control-lever position  $46.5^\circ$ ,  
control-rod travel deduction must be  
greater than 0.2 mm after switchover  
point (of starting cam).

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 09.05.94  
Replaces : 25.09.92  
Test oil : ISO-4113  
  
Combination no. : 0 400 074 891  
  
Injection pump  
Pump designation : PES4M55C320RS169  
EP type number : 0 410 054 959  
Governor  
Governor design. : RSF375/2300M75  
Governor no. : 0 420 021 160

Customer spec. information  
Customer : MB

Engine : OM601-ECE

1st version kW : 55.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 1 688 901 111

Opening  
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10  
                  : (2.95...2.15)  
Rack travel in mm : 20.00...22.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 3.3...3.4

100 s: (3.2...3.5)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 0.6...0.7

100 s: (0.55...1.00)

Spread cm3 : 0.1

100 s: (0.15)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 33.0...34.0

1000 : (32.0...35.0)

Spread cm3 : 2.50

1000 : (3.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.50...8.90

Speed rpm : 2500

4th rack travel in: 2900

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.20...1.30

## LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring





starting cam) up to 1000 1/min.  
Control-lever position  $46.5^\circ$ ,  
control-rod travel deduction must be  
greater than 0.2 mm after switchover  
point (of starting cam).

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 =  $19.3^\circ \dots 19.7^\circ$   
( $19.2^\circ \dots 19.8^\circ$ ) angular displacement of  
cam following start of delivery of  
cylinder no. 1.  
Difference in start of delivery between  
max. and min. value = max.  $1^\circ$  angular  
displacement of cam

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 30.03.94  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 074 898  
  
Injection pump  
Pump designation : PES4M55C320RS172  
EP type number : 0 410 054 958  
Governor  
Governor design. : RSF375/2300M56-10  
Governor no. : 0 420 021 130

Customer spec. information  
Customer : MB-PKW

Engine : OM601-Abgl. MJ90

1st version kW : 53.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 1 688 901 111

Opening  
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80  
: (1.65...1.85)

Rack travel in mm : 20.00...22.00  
Firing order : 1- 3- 4- 2

A20

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.30...12.40

Del. quantity cm<sup>3</sup>/ : 3.3...3.4

100 s: (3.2...3.5)

Spread cm<sup>3</sup> : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.4...6.6

Del. quantity cm<sup>3</sup>/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm<sup>3</sup> : 0.1

100 s: (0.1)

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 900

Aneroid pressure h: 1100

Del. quantity : 33.0...34.0

1000 : (32.0...35.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.30...8.70

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 900

Rack travel in mm : 1.40...1.50

### LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

### Testing:

### SET IDLE AUXILIARY SPRING

## TORQUE CONTROL

## Aneroid/Altitude Compensator Test

## Setting

## Measurement

## FUEL DELIVERY CHARACTERISTICS

```

Aneroid pressure h: 1100
Speed rpm : 1400
Del.quantity cm3/ : 33.0...34.6
1000 s: (32.0...35.5)
Spread cm3 : 2.50
1000 s: (3.0)
Aneroid pressure h: 1100
Speed rpm : 2300
Del.quantity cm3/ : 34.0...36.0
1000 s: (33.0...37.0)

```

STARTING FUEL DELIVERY

## HIGH IDLE

```

Aneroid pressure h: 1100
Speed              rpm : 2500
Del.quantity       cm3/ : 20.0...24.0
                  1000 s: (19.0...25.0)
Spread             cm3 : 2.50
                  1000 s: (3.00)

```

```
Speed          rpm      : 375
Rack travel in mm : 6.40...6.60
Del.quantity cm3/  : 6.0...7.0
                1000 s: (5.5...10.0)
Spread         cm3     : 1.00
                1000 s: (1.50)
```

Speed rpm : 425  
Rack travel in mm : 8.10...9.70  
Del.quantity cm3/ : 14.00...22.00  
1000 s : -  
Vacuum hPa : 400

Sliding sleeve pre-travel = 6.5 mm

With  $n = 375$  1/min. and  $p_u = 450$  mbar,  
control rod must move quickly to  
control-rod travel = 0 mm

-Control-lever position 49°, max.  
0.2 mm control-rod travel deduction  
allowable after switchover point (of  
starting cam) up to 1000 1/min.  
Control-lever position 46.5°,  
control-rod travel deduction must be

greater than 0.2 mm after switchover point (of starting cam).

Difference in start of delivery between max. and min. value = max.  $1^\circ$  angular displacement of cam

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 =  $16.8^\circ \dots 17.2^\circ$   
( $16.7 \dots 17.3^\circ$ ) angular displacement of cam following start of delivery of cylinder no. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 30.03.94  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 400 074 899  
Injection pump  
Pump designation : PES4M55C32ORS167  
EP type number : 0 410 054 960  
Governor  
Governor design. : RSF375/1700M69-4  
Governor no. : 0 420 021 139

Customer-spec. information  
Customer : MB-NFZ

Engine : OM601-2.3L

1st version kW : 49.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 1 688 901 111

Opening  
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness : 6.00X2.00X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10  
: (1.95...2.15)  
Rack travel in mm : 20.00...22.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.30...12.40

Del.quantity cm<sup>3</sup>/ : 3.7...3.8

100 s: (3.6...3.9)

Spread cm<sup>3</sup> : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 5.5...5.7

Del.quantity cm<sup>3</sup>/ : 0.6...0.7

100 s: (0.55...1.00)

Spread cm<sup>3</sup> : 0.1

100 s: (0.15)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 37.0...38.0

1000 : (36.0...39.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9.00...9.50

Speed rpm : 1800

4th rack travel in: 2300

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.40...1.50

## LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 425

Rack travel in mm : 7.00...8.60

Del. quantity cm<sup>3</sup>/ : -

1000 s: --

Vacuum hPa : 400

Remarks:

:

Sliding sleeve pre-travel = 6.25 mm

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With  $n = 375$  1/min. and  $p_u = 450$  mbar,  
control rod must move quickly to  
control-rod travel = 0 mm

\* Setting point for negative torque  
control - negative retainer behind  
sliding sleeve

\*\* Reference measurement:

Control-rod travel and delivery too  
large - position spiral spring  
downwards

Control-rod travel and delivery too  
small - position spiral spring upwards

Start-of-delivery sensor system:  
adjustment and blocking with device

KDEP 1077 =  $15.3^\circ \dots 15.7^\circ$

( $15.2 \dots 15.8^\circ$ ) angular displacement of  
cam following start of delivery of  
cylinder no. 1.

Difference in start of delivery between  
max. and min. value = max.  $1^\circ$  angular  
displacement of cam

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 09.05.94  
Replaces : 18.12.92  
Test oil : ISO-4113  
  
Combination no. : 0 400 074 904  
  
Injection pump  
Pump designation : PES4M55C320RS169  
EP type number : 0 410 054 959  
Governor  
Governor design. : RSF375/2300M56-6  
Governor no. : 0 420 021 110

Cust. part no. : T8

Customer-spec. information  
Customer : MB-PKW

Engine : OM601-ECE

1st version kW : 53.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 1 688 901 111

Opening  
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10  
: (1.95...2.15)

Rack travel in mm : 20.00...22.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.30...12.40

Del. quantity cm3/ : 3.3...3.4

100 s: (3.2...3.5)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.4...6.6

Del. quantity cm3/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm3 : 0.1

100 s: (0.1)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 33.0...34.0

1000 : (32.0...35.0)

Spread cm3 : 2.50

1000 : (3.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.5...8.9

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.2...1.3

LOW IDLE 1

Control lever





Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 =  $19.3^{\circ} \dots 19.7^{\circ}$   
( $19.2 \dots 19.8^{\circ}$ ) angular displacement of  
cam following start of delivery of  
cylinder no. 1.  
Difference in start of delivery between  
max. and min. value = max.  $1^{\circ}$  angular  
displacement of cam

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 2,3 B  
Edition : 09.05.94  
Replaces : 28.05.90  
Test oil : ISO-4113

Combination no. : 0 400 074 905

Injection pump  
Pump designation : PES4M55C320RS167  
EP type number : 0 410 054 960  
Governor  
Governor design. : RSF375/1900M69-1  
Governor no. : 0 420 021 102

Customer-spec. information  
Customer : MB-NFZ

Engine : OM601-2.3L

1st version kW : 58.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10  
: (1.95...2.15)  
Rack travel in mm : 20.00...22.00  
Firing order : 1-3-4-2

B01

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.80...12.90

Del. quantity cm3/ : 4.0...4.1

100 s: (3.9...4.2)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 5.0...5.2

Del. quantity cm3/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.1)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 40.0...41.0

1000 : (39.0...42.0)

Spread cm3 : 2.50

1000 : (3.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7,0...7,5

Speed rpm : 2100

4th rack travel in: 2500

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 11...15

Setting point w/out bumper spring

### Testing:

```

Speed          rpm : 250
Minimum rack travel: 10.20
Speed          rpm : 375
Rack travel in mm : 5.00...5.20
Rack travel in mm : 3.00
Speed          rpm : 480...580
Speed          rpm : 1000
Maximum rack travel: 1.50

```

SET IDLE AUXILIARY SPRING

```
Speed      rpm      : 420
Rack travel in mm : 3,9...4,1
                : (3,8...4,2)
```

## TORQUE CONTROL

```

Torque control curve - 1st version
1st speed   rpm   : 1000
  Rack travel in m: 12.80...12.90
2nd speed   rpm   : 1400
  Rack travel in m: 12.20...12.50
3rd speed   rpm   : 1900
  Rack travel in m: 11.40...11.70
4th speed   rpm   : 500 *
  Rack travel in m: 12.00...12.30 *
5th speed   rpm   : 800**
  Rack travel in m: 12.40...12.70**

```

## Aneroid/Altitude Compensator Test

1st version

```
Setting
Speed      rpm      : 1000
Pressure    hPa      : 950
Rack travel mm : 0.00...0.20
```

## Measurement

Speed 1/min : 1000

```
1st pressure hPa : 900
  Rack travel in m: 0.50...0.70
2nd pressure hPa : 750
  Rack travel in m: 1.80...2.20
```

## FUEL DELIVERY CHARACTERISTICS

1st version

```

Aneroid pressure h: 1100
Speed          rpm   : 1400
Del.quantity   cm3/   : 39.5...41.0
                1000 s: (38.5...42.0)
Spread         cm3    : 2.50
                1000 s: (3.0)
Aneroid pressure h: 1100

```

```
Speed          rpm      : 1900
Del.quantity   cm3/     : 39.5...41.5
                1000 s: (38.5...42.5)
Spread         cm3      : 2.50
                1000 s: (3.00)
Aneroid pressure h: 1100
Speed          rpm      : 500 *
Del.quantity   cm3/     : 34.5...36.0  *
                1000 s: (33.5...37.0) *
Spread         cm3      : 2.50
                1000 s: (3.00)
Aneroid pressure h: 1100
Speed          rpm      : 800**
Del.quantity   cm3/     : 37.5...39.0  **
                1000 s: (36.5...40.0)**
Spread         cm3      : 2.50
                1000 s: (3.00)
```

STARTING FUEL DELIVERY

```
Speed          rpm      : 100
Del.quantity   cm3/     : 52.0...0.0
                1000 s: (52.0...0.0)
Rack travel    in mm    : 20.10...0.00
```

HIGH IDLE

```

1st version
Aneroid pressure h: 1100
Speed          rpm   : 2100
Rack travel in mm : 7.00...7.50
Del.quantity cm3/   : 22.0...26.0
                  1000 s: (21.0...27.0)
Spread         cm3   : 2.50
                  1000 s: (3.00)

```

LOW IDLE

```
Speed      rpm      : 375
Rack travel in mm : 5.00...5.20
Del.quantity cm3/  : 5.0...6.0
              1000 s: (4.5...9.0)
Spread     cm3      : 1.00
              1000 s: (1.50)
```

## SETTING PNEUMATIC FAST IDLE (ELA)

Speed rpm : 425  
Rack travel in mm : (6,6...8,2)  
Del.quantity cm3/ : -  
1000 s : (11,5...19,5)  
Vacuum hPa : 400

Remarks:

Pin projection = 16.60...16.70 mm

Difference in start of delivery between  
max. and min. value = max. 1° angular  
displacement of cam

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 = 15.3°...15.7°  
(15.2...15.8°) angular displacement of  
cam following start of delivery of  
cylinder no. 1.

TESTING PNEUMATIC SHUTOFF DEVICE  
-Control lever at idle stop.  
With  $n = 375$  1/min. and  $p_u = 450$  mbar,  
control rod must move quickly to  
control-rod travel = 0 mm

\* Setting point for negative torque  
control - negative retainer behind  
sliding sleeve

\*\* Reference measurement:  
Control-rod travel and delivery too  
large - position spiral spring  
downwards  
Control-rod travel and delivery too  
small - position spiral spring upwards

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 18.04.93  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 400 075 922  
Injection pump  
Pump designation : PES5M55C320RS168  
EP type number : 0 410 055 978  
Governor  
Governor design. : RSI350/2000M56-15  
Governor no. : 0 420 021 272

Customer-spec. information  
Customer : MB-PKW

Engine : OM602 - 2,9L

1st version kW : 68.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 1 688 901 111

Opening  
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness : 6.00X2.00X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10  
: (1.95...2.15)  
Rack travel in mm : 20.00...22.00  
Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 3.8...3.9

100 s: (3.7...4.0)

Spread cm3 : 0.25

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm3 : 0.1

100 s: (0.15)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 38.0...39.0

1000 : (37.0...40.0)

Spread cm3 : 2.50

1000 : (3.00)

## RATED SPEED

1st version

Control lever  
position degrees: 50...0

3rd rack travel in: 8.65...9.15

Speed rpm : 2200

4th rack travel in: 2550

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.40...1.50

## LOW IDLE 1

Control lever

position degrees: 12.0...16.0

Setting point w/out bumper spring

Speed rpm : 350

### Testing:

```
Speed      rpm      : 250
Minimum rack travel: 9.20
Speed      rpm      : 350
Rack travel in mm : 5.20...5.40
Speed      rpm      : 1400
Maximum rack travel: 1.45
```

SET IDLE AUXILIARY SPRING

```
Speed      rpm      : 450
Rack travel in mm : 4.00...4.20
                : (3.90...4.30)
```

## TORQUE CONTROL

```

Torque control curve - 1st version
1st speed   rpm   : 1000
  Rack travel in m: 12.10...12.20
2nd speed   rpm   : 1800
  Rack travel in m: 11.90...12.10
3rd speed   rpm   : 2000
  Rack travel in m: 11.70...11.90

```

## Aneroid/Altitude Compensator Test

1st version

```
Setting
Speed      rpm      : 1000
Pressure    hPa      : 940
Rack travel mm : 0.00...0.20
```

## Measurement

Speed 1/min : 1000

1st pressure hPa : 900  
Rack travel in m: 0.30...0.50  
2nd pressure hPa : 750  
Rack travel in m: 1.40...1.80

## FUEL DELIVERY CHARACTERISTICS

1st version

```

Speed          rpm      : 1800
Del.quantity   cm3/      : 40.0...41.6
                1000 s : (39.0...42.6)
Spread         cm3       : 2.50
                1000 s : (3.0)
Speed          rpm      : 2000
Del.quantity   cm3/      : 40.0...42.0
                1000 s : (39.0...43.0)
Spread         cm3       : 2.50
                1000 s : (3.00)

```

STARTING FUEL DELIVERY

```
Speed          rpm      : 100
Del.quantity   cm3/     : 54.0...0.0
                1000 s: (54.0...0.0)
Rack travel    in mm    : 20.10...0.00
```

## HIGH IDLE

## 1st version

```
Speed      rpm      : 2200
Del.quantity cm3/    : 29.0...33.0
            1000 s : (28.0...34.0)
Spread     cm3       : 2.50
            1000 s : (3.00)
```

LOW IDLE

```
Speed          rpm      : 350
Rack travel in mm : 5.20...5.40
Del.quantity cm3/  : 6.0...7.0
                1000 s: (5.5...10.0)
Spread         cm3     : 1.00
                1000 s: (1.50)
```

## SETTING PNEUMATIC FAST IDLE (ELA)

```
Speed      rpm      : 400
Rack travel in mm : 5.30...6.90
Del.quantity cm3/  : 7.00...15.00
              1000 s: -
Vacuum      hPa     : 400
```

## Remarks:

Difference in start of delivery between  
max. and min. value = max.  $1^\circ$  angular  
displacement of cam

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 = 15.3°...15.7°  
(15.2...15.8°) angular displacement of  
cam following start of delivery of  
cylinder no. 1.

## CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.  
0.2 mm control-rod travel deduction  
allowable after switchover point (of  
starting cam) up to 1000 1/min.  
Control-lever position 46.5°,  
control-rod travel deduction must be  
greater than 0.2 mm after switchover  
point (of starting cam).

Sliding sleeve pre-travel = 6.25 mm

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.

At  $n = 350$  1/min and  $p_u = 450$  mbar

control rod must move briskly to

control-rod travel = 0 mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 18.04.94  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 075 925  
  
Injection pump  
Pump designation : PES5M55C320RS201  
EP type number : 0 410 055 972  
Governor  
Governor design. : RSF350/2500M56-13  
Governor no. : 0 420 021 171

Customer-spec. information  
Customer : MB-PKW

Engine : OM605

1st version kw : 83.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 1 688 901 111

Opening  
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80  
: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 3.65...3.75

100 s: (3.55...3.85)

Spread cm3 : 0.25

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 7.3...7.5

Del.quantity cm3/ : 0.8...0.9

100 s: (0.75...1.15)

Spread cm3 : 0.1

100 s: (0.15)

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1400

Aneroid pressure h: 1100

Del.quantity : 36.5...37.5

1000 : (35.5...38.5)

Spread cm3 : 2.50

1000 : (3.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7.00...7.60

Speed rpm : 2700

4th rack travel in: 3150

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.90...2.00

## LOW IDLE 1

Control lever

position degrees: -

Setting point w/out bumper spring



Sliding sleeve pre-travel = 6.25 mm

CHECKING THE IDLE-SPEED AUXILIARY  
SPRING CUTOFF

-Control-lever position  $49^\circ$ , max.  
0.2 mm control-rod travel deduction  
allowable after switchover point (of  
starting cam) up to 1000 1/min.  
Control-lever position  $46.5^\circ$ ,  
control-rod travel deduction must be  
greater than 0.2 mm after switchover  
point (of starting cam).

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 18.04.94  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 400 075 926  
Injection pump  
Pump designation : PESSM55C320RS201  
EP type number : 0 410 055 972  
Governor  
Governor design. : RSF350/2500M75-3  
Governor no. : 0 420 021 173

Customer-spec. information  
Customer : MB-PKW

Engine : OM605

1st version kW : 83.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 1 688 901 111

Opening  
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80  
: (1.65...1.85)

Rack travel in mm : 20.00...22.00  
Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 12.70...12.80

Del. quantity cm3/ : 3.65...3.75

100 s: (3.55...3.85)

Spread cm3 : 0.15

100 s: (0.25)

2nd speed rpm : 350.0

Rack travel in mm : 7.3...7.5

Del. quantity cm3/ : 0.8...0.9

100 s: (0.7...1.05)

Spread cm3 : 0.1

100 s: (0.15)

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1400

Aneroid pressure h: 1100

Del. quantity : 36.5...37.5

1000 : (35.5...38.5)

Spread cm3 : 2.50

1000 : (3.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7.00...7.60

Speed rpm : 2700

4th rack travel in: 3150

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1400

Rack travel in mm : 1.90...2.00

## LOW IDLE 1

Control lever

position degrees: -

Setting point w/out bumper spring



Sliding sleeve pre-travel = 6.25 mm

CHECKING THE IDLE-SPEED AUXILIARY  
SPRING CUTOFF

-Control-lever position 49°, max.  
0.2 mm control-rod travel deduction  
allowable after switchover point (of  
starting cam) up to 1000 1/min.  
Control-lever position 46.5°,  
control-rod travel deduction must be  
greater than 0.2 mm after switchover  
point (of starting cam).

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 18.04.94  
Replaces : 27.10.92  
Test oil : ISO-4113  
  
Combination no. : 0 400 075 930  
  
Injection pump  
Pump designation : PES5M55C320RS177  
EP type number : 0 410 055 974  
Governor  
Governor design. : RSF340/2300M74-1  
Governor no. : 0 420 021 156

Cust. part no. : T8

Customer-spec. information  
Customer : MB-PKW

Engine : OM602A-D/A (KAT)

1st version kW : 92.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 1 588 901 111

Opening  
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80  
: (1.65...1.85)

Rack travel in mm : 20.00...22.00  
Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.70...13.80

Del.quantity cm<sup>3</sup>/ : 5.1...5.2

100 s: (5.0...5.3)

Spread cm<sup>3</sup> : 0.2

100 s: (0.3)

2nd speed rpm : 345.0

Rack travel in mm : 5.5...5.7

Del.quantity cm<sup>3</sup>/ : 0.6...0.7

100 s: (0.5...0.9)

Spread cm<sup>3</sup> : 0.1

100 s: (0.1)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del.quantity : 51.7...52.7

1000 : (50.7...53.7)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8,5...8,9

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,7...1,8

LOW IDLE 1

Control lever

position degrees: 8...12 FD<270  
Setting point w/out bumper spring  
Speed rpm : 345  
Rack travel in mm : 5.6

#### Testing:

Speed rpm : 150 \*  
Minimum rack trave: 10.0+1  
Speed rpm : 345  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.50  
Speed rpm : 550...650  
Speed rpm : 1000  
Maximum rack trave: 1.80

#### LOW IDLE 2

##### Control lever

position degrees: 8-12FD 270  
Setting point w/out bumper spring  
Speed rpm : 345  
Rack travel in mm : 5,6

#### Testing:

Speed rpm : 220  
Rack travel in mm : MIN. 8,0 \*\*  
Speed rpm : 345  
Rack travel in mm : 5,5...5,7  
Speed rpm : 580  
Rack travel in mm : 2,5  
Speed rpm : 680  
Rack travel in mm : 2,5

#### SET IDLE AUXILIARY SPRING

Speed rpm : 400  
Rack travel in mm : 4,7-4,9FD270  
                          : 4,2-4,4 FD<270

#### TORQUE CONTROL

##### Torque control curve - 1st version

1st speed rpm : 1000  
Rack travel in m: 13.70...13.80  
2nd speed rpm : 1600  
Rack travel in m: 13.00...13.20  
3rd speed rpm : 2200  
Rack travel in m: 12.20...12.40

#### Aneroid/Altitude Compensator Test

##### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 1600  
Rack travel mm : 0.30...0.70

#### Measurement

Speed 1/min : 1000

1st pressure hPa : 1050

B14

Rack travel in m: 3.40...3.60  
2nd pressure hPa : 750  
Rack travel in m: 4.90...5.30

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1850  
Speed rpm : 1600  
Del.quantity cm3/ : 50.0...51.5  
                  1000 s: (49.0...52.5)  
Spread cm3 : 2.50  
                  1000 s: (3.0)  
Aneroid pressure h: 1850  
Speed rpm : 2200  
Del.quantity cm3/ : 48.5...50.5  
                  1000 s: (47.5...51.5)  
Spread cm3 : 2.50  
                  1000 s: (3.00)  
Aneroid pressure h: 1050  
Speed rpm : 1000  
Del.quantity cm3/ : 34.0...35.0  
                  1000 s: (33.0...36.0)  
Spread cm3 : 2.50  
                  1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 54.0...0.0  
                  1000 s: (54.0...0.0)  
Rack travel in mm : 20.10...0.00

#### HIGH IDLE

##### 1st version

Aneroid pressure h: 1850  
Speed rpm : 2500  
Rack travel in mm : 8.50...8.90  
Del.quantity cm3/ : 30.0...34.0  
                  1000 s: (29.0...35.0)  
Spread cm3 : 2.50  
                  1000 s: (3.00)

#### LOW IDLE

Speed rpm : 345  
Rack travel in mm : 5.50...5.70  
Del.quantity cm3/ : 6.0...7.0  
                  1000 s: (5.0...9.5)  
Spread cm3 : 1.00  
                  1000 s: (1.50)

#### SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)



Control lever at idle stop  
Speed rpm : 370  
Rack travel in mm : (11,8...13,3)  
Del. quantity cm<sup>3</sup>/ : -  
1000 s: (38,0...46,0)  
Current A : 1,8

Control lever at full-load stop  
Speed rpm : 2950  
Rack travel in mm : 0,0...1,0  
Current  
short-duration A : 3,0  
Starting test  
Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : -  
min. 1000 s: 54,0 1,8A

Remarks:

ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD)  
Control lever on full-load stop. At  $n = 1000$  min  
 $I = 2.5$  A, difference in delivery referenced to  
delivery (5.6...7.6) ccm/1000 strokes.

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 =  $16.8^\circ \dots 17.2^\circ$   
( $16.7 \dots 17.3^\circ$ ) angular displacement of  
cam following start of delivery of  
cylinder no. 1.

Difference in start of delivery between  
max. and min. value = max.  $1^\circ$  angular  
displacement of cam

CORRECTION OF INJECTED-FUEL QUANTITY  
-Set max. change plus/minus 0.75 mm  
control-rod travel at correction  
screw on ALDA pressure box.

Sliding sleeve pre-travel = 6.25 mm

Testing and adjusting the control-rod-  
travel sensor with evaluation circuit  
KDEP-P400

Receiving inspection

Shift control lever to full-load stop.  
Set 13.5 V at stabilizer. Apply  
1850 hPa to ALDA. Run up to speed of  
1000 1/min; a voltage of 2.457...2.517  
(2.427...2.547) V must be displayed  
on the digital voltmeter.

Adjustment of the control-rod travel  
sensor

At a speed of 1000 1/min, set fuel  
delivery at 21,5...22,5 (20,5...23,5)  
ccm/1000 strokes with control lever.  
Shift control-rod-travel sensor until  
 $U = 1.633 \dots 1.639$  (1.635...1.637) V is  
indicated. Tighten fastening screws  
with 1...2 Nm. Control lever to full-  
load stop; voltage value of 2.457...  
2.517 V must be attained.

\* Sliding sleeve pre-travel = 4.7 mm

CHECKING THE IDLE-SPEED AUXILIARY  
SPRING CUTOFF

-Control-lever position  $44,5^\circ$  max.  
0.2 mm control-rod travel deduction  
allowable after switchover point (of  
starting cam) up to 1000 1/min.  
-Control-lever position  $42,0^\circ$ ,  
control-rod travel deduction must be  
greater than 0.2 mm after switchover  
point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.  
With  $n = 315$  1/min. and  $p_u = 450$  mbar,  
control rod must move quickly to  
control-rod travel = 0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 2.5 C3  
Edition : 18.04.94  
Replaces : 15.10.91  
Test oil : ISO-4113

Combination no. : 0 400 075 938

Injection pump  
Pump designation : PESSM55C320RS170  
EP type number : 0 410 055 977  
Governor  
Governor design. : RSF350/2300M71-3  
Governor no. : 0 420 021 136

Customer-spec. information  
Customer : MB-PKW

Engine : OM602-ECE MJ90

1st version kW : 66.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...173

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10  
: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 3.2...3.3

100 s: (3.1...3.4)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 6.5...6.7

Del.quantity cm3/ : 0.5...0.6

100 s: (0.45...0.9)

Spread cm3 : 0.1

100 s: (0.15)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 32.0...33.0

1000 : (31.0...34.0)

Spread cm3 : 2.50

1000 : (3.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.5...8.9

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.2...1.3

## LOW IDLE 1

Control lever

position degrees: 12..16 FD<270

Setting point w/out bumper spring



#### SPRING CUTOFF

- Control-lever position  $49^\circ$ , max.  
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.  
Control-lever position  $46.5^\circ$ ,  
control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

#### CHECKING THE PNEUMATIC SHUTOFF BOX

- Control lever up against idle stop.  
At  $n = 350$  1/min and  $p_u = 450$  mbar  
control rod must move briskly to  
control-rod travel = 0 mm

#### Start-of-delivery sensor system:

adjustment and blocking with device

KDEP 1077 =  $19.3^\circ \dots 19.7^\circ$

( $19.2^\circ \dots 19.8^\circ$ ) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max.  $1^\circ$  angular displacement of cam

#### ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD)

Control lever on full-load stop. At  $n = 1000$  min.  $-1$ ,  $I = 2.5$  A, difference in delivery referenced to full-load delivery (6.3...8.3) ccm/1000 strokes.

Sliding sleeve pre-travel = 6.25 mm

\* Sliding sleeve pre-travel = 5.2 mm

Engine with two-mass flywheel

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 20.04.94  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 075 939  
  
Injection pump  
Pump designation : PESSM55C320RS173  
EP type number : 0 410 055 976  
Governor  
Governor design. : RSF350/Z300M71-2  
Governor no. : 0 420 021 135

Customer-spec. information  
Customer : MB-PKW

Engine : OM602-Abgl. M90

1st version kw : 64.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 1 688 901 111

Opening  
pressure, bar : 147...150

Test Lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80  
: (1.65...1.85)  
Rack travel in mm : 20.00...22.00  
Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.40...12.50

Del.quantity cm<sup>3</sup>/ : 3.25...3.35

100 s: (3.15...3.45)

Spread cm<sup>3</sup> : 0.25

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del.quantity cm<sup>3</sup>/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm<sup>3</sup> : 0.1

100 s: (0.1)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 32.5...33.5

1000 : (31.5...34.5)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.90...9.30

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.4...1.5

## LOW IDLE 1

Control lever

position degrees: 12..16 FD 270

Setting point w/out bumper spring

Remarks:

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 =  $16.8^{\circ} \dots 17.2^{\circ}$   
( $16.7 \dots 17.3^{\circ}$ ) angular displacement of  
cam following start of delivery of  
cylinder no. 1.

Difference in start of delivery between  
max. and min. value = max.  $1^{\circ}$  angular  
displacement of cam

#### ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD)

Control lever on full-load stop. At  $n$   
= 1000 min.<sup>-1</sup>,  $I = 2.5$  A, difference  
in delivery referenced to full-load  
delivery ( $6.3 \dots 8.3$ ) ccm/1000 strokes.

CHECKING THE PNEUMATIC SHUTOFF BOX  
-Control lever up against idle stop.  
At  $n = 350$  1/min and  $p_u = 450$  mbar  
control rod must move briskly to  
control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.25 mm

\* Sliding sleeve pre-travel = 5.2 mm

#### CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position  $49^{\circ}$ , max.  
0.2 mm control-rod travel deduction  
allowable after switchover point (of  
starting cam) up to 1000 1/min.  
Control-lever position  $46.5^{\circ}$ ,  
control-rod travel deduction must be  
greater than 0.2 mm after switchover  
point (of starting cam).

Engine with two-mass flywheel

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 2.5 C5  
 Edition : 20.04.94  
 Replaces : 15.04.91  
 Test oil : ISO-4113  
 Combination no. : 0 400 075 940  
 Injection pump  
 Pump designation : PES5M55C320RS173  
 EP type number : 0 410 055 976  
 Governor  
 Governor design. : RSF340/2300M60-26  
 Governor no. : 0 420 021 133

Customer-spec. information  
 Customer : MB-PKW

Engine : OM602-Abgl. MJ90

1st version kW : 64.0

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 1 688 901 111

Opening  
 pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80  
 : (1.65...1.85)  
 Rack travel in mm : 20.00...22.00  
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 3.25...3.35

100 s: (3.15...3.45)

Spread cm3 : 0.25

100 s: (0.3)

2nd speed rpm : 315.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm3 : 0.1

100 s: (0.1)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 32.5...33.5

1000 : (31.5...34.5)

Spread cm3 : 2.50

1000 : (3.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.9...9.3

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.4...1.5

## LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring



Speed rpm : 315  
Rack travel in mm : 6.5

#### Testing:

Speed rpm : 220  
Minimum rack travel: 8.00  
Speed rpm : 315  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.50  
Speed rpm : 600...700  
Speed rpm : 1000  
Maximum rack travel: 1.50

#### SET IDLE AUXILIARY SPRING

Speed rpm : 380  
Rack travel in mm : 5.2...5.4  
: (5.1...5.5)

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 1800  
Rack travel in m: 11.80...12.00  
3rd speed rpm : 2200  
Rack travel in m: 11.50...11.70

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 950  
Rack travel mm : 0.00...0.20

#### Measurement

Speed 1/min : 1000

1st pressure hPa : 900  
Rack travel in m: 0.50...0.70  
2nd pressure hPa : 750  
Rack travel in m: 1.80...2.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 1800  
Del.quantity cm3/ : 34.5...36.1  
1000 s: (33.5...37.1)  
Spread cm3 : 2.50  
1000 s: (3.0)  
Aneroid pressure h: 1100  
Speed rpm : 2200  
Del.quantity cm3/ : 34.0...36.0  
1000 s: (33.0...37.0)

Spread cm3 : 2.50  
1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 52.0...0.0  
1000 s: (52.0...0.0)  
Rack travel in mm : 20.10...0.00

#### HIGH IDLE

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 2500  
Rack travel in mm : 8.90...9.30  
Del.quantity cm3/ : 22.0...26.0  
1000 s: (21.0...27.0)  
Spread cm3 : 2.50  
1000 s: (3.00)

#### LOW IDLE

Speed rpm : 315  
Rack travel in mm : 6.40...6.60  
Del.quantity cm3/ : 6.0...7.0  
1000 s: (5.5...10.0)  
Spread cm3 : 1.00  
1000 s: (1.50)

#### SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

#### Control Lever at idle stop

Speed rpm : 340  
Rack travel in mm : 13.0...14.4  
Del.quantity cm3/ : 30.0...38.0  
1000 s: -  
Current A : 1.8

#### Control Lever at full-load stop

Speed rpm : 2950  
Rack travel in mm : 0.0...1.0  
Current

short-duration A : 3.0

#### Starting test

Speed rpm : 100  
Del.quantity cm3/ : -  
min. 1000 s: - 1.8A

#### Remarks:

:  
Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 = 16.8°...17.2°  
(16.7...17.3°) angular displacement of  
cam following start of delivery of

cylinder no. 1.

Difference in start of delivery between  
max. and min. value = max.  $1^\circ$  angular  
displacement of cam

#### TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With  $n = 315$  1/min. and  $p_u = 450$  mbar,  
control rod must move quickly to  
control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

#### CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position  $49^\circ$ , max.

0.2 mm control-rod travel deduction  
allowable after switchover point (of  
starting cam) up to 1000 1/min.

Control-lever position  $46.5^\circ$ ,  
control-rod travel deduction must be  
greater than 0.2 mm after switchover  
point (of starting cam).

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 2.5 C8  
Edition : 20.04.94  
Replaces : 15.04.91  
Test oil : ISO-4113  
  
Combination no. : 0 400 075 941  
  
Injection pump  
Pump designation : PES5M55C320RS173  
EP type number : 0 410 055 976  
Governor  
Governor design. : RSF350/2300M56-11  
Governor no. : 0 420 021 131

Customer-spec. information  
Customer : MB-PKW

Engine : OM602-Abgl. MJ90

1st version kW : 64.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 1 688 901 111

Opening  
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80  
: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 3.25...3.35

100 s: (3.15...3.45)

Spread cm3 : 0.25

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm3 : 0.1

100 s: (0.1)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 32.5...33.5

1000 : (31.5...34.5)

Spread cm3 : 2.50

1000 : (3.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.9...9.3

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.4...1.5

## LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

### Testing:

SET IDLE AUXILIARY SPRING

## TORQUE CONTROL

## Aneroid/Altitude Compensator Test

1st version

## Measurement

```
1st pressure hPa : 900
  Rack travel in m: 0.50...0.70
2nd pressure hPa : 750
  Rack travel in m: 1.80...2.20
```

1st version

Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

```
Speed          rpm      : 100
Del.quantity   cm3/      : 52.0...0.0
                1000 s : (52.0...0.0)
Rack travel    in mm     : 20.10...0.00
```

## 1st version

LOW IDLE

## SETTING PNEUMATIC FAST IDLE (ELA)

Remarks:

Difference in start of delivery between  
max. and min. value = max.  $1^\circ$  angular  
displacement of cam

## CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.  
At  $n = 350$  1/min and  $p_u = 450$  mbar  
control rod must move briskly to  
control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY  
SPRING CUTOFF

- Control-lever position  $49^\circ$ , max.  
0.2 mm control-rod travel deduction  
allowable after switchover point (of  
starting cam) up to 1000 1/min.
- Control-lever position  $46.5^\circ$ ,  
control-rod travel deduction must be  
greater than 0.2 mm after switchover  
point (of starting cam).

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 2.5 C9  
Edition : 27.04.94  
Replaces : 13.11.89  
Test oil : ISO-4113

Combination no. : 0 400 075 942

Injection pump  
Pump designation : PESSM55C320RS158-1  
EP type number : 0 410 055 979  
Governor  
Governor design. : RSF340/2300M73  
Governor no. : 0 420 021 129

Customer-spec. information  
Customer : MB-PKW

Engine : OM602A-ECE

1st version kW : 92.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 1 688 901 111

Opening  
pressure, bar : 147...150

Test Lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30  
: (2.15...2.35)  
Rack travel in mm : 20.00...22.00  
Firing order : 1- 2- 4- 5- 3

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Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 5.25...5.35

100 s: (5.15...5.45)

Spread cm3 : 0.25

100 s: (0.3)

2nd speed rpm : 345.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm3 : 0.1

100 s: (0.15)

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del.quantity : 52.5...53.5

1000 : (51.5...54.5)

Spread cm3 : 2.50

1000 : (3.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.1...8.5

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.7...1.8

## LOW IDLE 1

Control lever

position degrees: 8...12 FD 270

Setting point w/out bumper spring

Speed rpm : 345  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 220\*\*  
Minimum rack travel: 8.00  
Speed rpm : 345  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.50  
Speed rpm : 560...660  
Speed rpm : 1000  
Maximum rack travel: 1.80

#### LOW IDLE 2

Control lever  
position degrees: 8...12  
Setting point w/out bumper spring  
Speed rpm : 345  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 150\*  
Rack travel in mm : 10+1 FD<270  
Speed rpm : 345  
Rack travel in mm : 5.2...5.4  
Speed rpm : 670  
Rack travel in mm : 2.5  
Speed rpm : 1000  
Rack travel in mm : 1.7...1.8

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 13.90...14.00  
2nd speed rpm : 1600  
Rack travel in m: 13.10...13.30  
3rd speed rpm : 2200  
Rack travel in m: 12.30...12.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 1600  
Rack travel mm : 0.45...0.85

#### Measurement

Speed 1/min : 1000

1st pressure hPa : 1100  
Rack travel in m: 3.55...3.75  
2nd pressure hPa : 750  
Rack travel in m: 5.40...5.80

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1850  
Speed rpm : 1600  
Del.quantity cm3/ : 51.0...52.5  
1000 s: (50.0...53.5)  
Spread cm3 : 2.50  
1000 s: (3.0)  
Aneroid pressure h: 1850  
Speed rpm : 2200  
Del.quantity cm3/ : 48.5...50.5  
1000 s: (47.5...51.5)  
Spread cm3 : 2.50  
1000 s: (3.00)  
Aneroid pressure h: 1100  
Speed rpm : 1000  
Del.quantity cm3/ : 36.0...37.0  
1000 s: (35.0...38.0)  
Spread cm3 : 2.50  
1000 s: (3.00)

#### HIGH IDLE

#### 1st version

Aneroid pressure h: 1850  
Speed rpm : 2500  
Rack travel in mm : 8.10...8.50  
Del.quantity cm3/ : 29.0...33.0  
1000 s: (28.0...34.0)  
Spread cm3 : 2.50  
1000 s: (3.00)

#### LOW IDLE

Speed rpm : 345  
Rack travel in mm : 5.20...5.40  
Del.quantity cm3/ : 6.0...7.0  
1000 s: (5.0...10.0)  
Spread cm3 : 1.00  
1000 s: (1.50)

#### SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

#### Control lever at idle stop

Speed rpm : 345  
Rack travel in mm : 11.4...13.4  
Del.quantity cm3/ : 39.0...47.0  
1000 s: -  
Current A : 1.8

#### Control lever at full-load stop

Speed rpm : 2950  
Rack travel in mm : 0.0...1.0  
Current  
short-duration A : 3.0  
Starting test  
Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : -  
min. 1000 s: - 1.8 A

Remarks:

: ARD  
: 1000 1/MIN -6.2..6.4

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 = 19.3°...19.7°  
(19.2...19.8°) angular displacement of  
cam following start of delivery of  
cylinder no. 1.  
Difference in start of delivery between  
max. and min. value = max. 1° angular  
displacement of cam

CHECKING THE PNEUMATIC SHUTOFF BOX  
-Control lever up against idle stop.  
At  $n = 345$  1/min and  $p_u = 450$  mbar  
control rod must move briskly to  
control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.25 mm

\* Sliding sleeve pre-travel = 4.7 mm

CHECKING THE IDLE-SPEED AUXILIARY  
SPRING CUTOFF  
-Control-lever position 44,5° max.  
0.2 mm control-rod travel deduction  
allowable after switchover point (of  
starting cam) up to 1000 1/min.  
-Control-lever position 42,0°,  
control-rod travel deduction must be  
greater than 0.2 mm after switchover  
point (of starting cam).



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 19.04.94  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 400 076 953

Injection pump  
Pump designation : PES6M55C320RS203  
EP type number : 0 410 056 982  
Governor  
Governor design. : RSF315/2500M70-11  
Governor no. : 0 420 021 270

Customer spec. information  
Customer : MB-PKW - USA

Engine : OM606

1st version kW : 95.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 1 688 901 111

Opening  
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80  
: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.10...13.20

Del. quantity cm<sup>3</sup>/ : 3.75...3.85

100 s: (3.65...3.95)

Spread cm<sup>3</sup> : 0.25

100 s: (0.30)

2nd speed rpm : 290.0

Rack travel in mm : 7.2...7.4

Del. quantity cm<sup>3</sup>/ : 0.8...0.9

100 s: (0.7...1.05)

Spread cm<sup>3</sup> : 0.1

100 s: (0.15)

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1100

Aneroid pressure h: 1100

Del. quantity : 37.5...38.5

1000 : (36.5...39.5)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7.80...8.00

Speed rpm : 2700

4th rack travel in: 3150

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.90...2.00

### LOW IDLE 1

Control lever

position degrees: 8.5...12.5

Setting point w/out bumper spring

Speed rpm : 290  
Rack travel in mm : 7.3

#### Testing:

Speed rpm : 220  
Minimum rack trave: 9.45  
Speed rpm : 290  
Rack travel in mm : 7.20...7.40  
Rack travel in mm : 3.00  
Speed rpm : 625...725  
Speed rpm : 1100  
Maximum rack trave: 2.00

#### SET IDLE AUXILIARY SPRING

Speed rpm : 400  
Rack travel in mm : 5.90...6.10  
: (5.80...6.20)

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100  
Rack travel in m: 13.10...13.20  
2nd speed rpm : 2000  
Rack travel in m: 12.25...12.55  
3rd speed rpm : 2500  
Rack travel in m: 11.75...12.05  
4th speed rpm : 500 \*  
Rack travel in m: 12.25...12.55  
5th speed rpm : 900\*\*  
Rack travel in m: 12.85...13.15

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1100  
Pressure hPa : 940  
Rack travel mm : 0.00...0.20

#### Measurement

Speed 1/min : 1100

1st pressure hPa : 900  
Rack travel in m: 0.30...0.50  
2nd pressure hPa : 750  
Rack travel in m: 1.40...1.80

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 2000  
Del.quantity cm3/ : 37.5...39.1  
1000 s: (36.5...40.1)  
Spread cm3 : 2.50  
1000 s: (3.0)  
Aneroid pressure h: 1100

C04

Speed rpm : 2500  
Del.quantity cm3/ : 36.5...38.5  
1000 s: (35.5...39.5)  
Spread cm3 : 2.50  
1000 s: (3.00)  
Aneroid pressure h: 1100  
Speed rpm : 500 \*  
Del.quantity cm3/ : 31.5...33.1  
1000 s: (30.5...34.1)  
Spread cm3 : 2.50  
1000 s: (3.00)  
Aneroid pressure h: 1100  
Speed rpm : 900\*\*  
Del.quantity cm3/ : 35.5...37.1  
1000 s: (34.5...38.1)  
Spread cm3 : 2.50  
1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 52.0...0.0  
1000 s: (52.0...0.0)  
Rack travel in mm : 20.10...0.00

#### HIGH IDLE

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 2700  
Del.quantity cm3/ : 14.0...18.0  
1000 s: (13.0...19.0)  
Spread cm3 : 2.50  
1000 s: (3.00)

#### LOW IDLE

Speed rpm : 290  
Rack travel in mm : 7.20...7.40  
Del.quantity cm3/ : 8.0...9.0  
1000 s: (7.0...10.5)  
Spread cm3 : 1.00  
1000 s: (1.50)

#### SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

#### Control lever at idle stop

Speed rpm : 315  
Rack travel in mm : 12.4...13.8  
Del.quantity cm3/ : 30.0...38.0  
1000 s: -  
Current A : 1.8

#### Control lever at full-load stop

Speed rpm : 3000  
Rack travel in mm : 0.00...2.00

Current  
short-duration A : 3.0  
Starting test  
Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : -  
min. 1000 s: - 1.8A

Remarks:

: \* RW-DIFF.STUPSER  
: 50 AUF 40 GRAD 0.2MM  
: N = 500 1/MIN

CHECKING THE PNEUMATIC SHUTOFF BOX  
-Control lever up against idle stop.  
At n = 290 1/min and pu = 450 mbar  
control rod must move briskly to  
control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 = 16.8°...17.2°  
(16.7...17.3°) angular displacement of  
cam following start of delivery of  
cylinder no. 1.

Difference in start of delivery between  
max. and min. value = max. 1° angular  
displacement of cam

\* Setting point for negative torque  
control - negative retainer behind  
sliding sleeve

\*\* Reference measurement:  
Control-rod travel and delivery too  
large - position spiral spring  
downwards  
Control-rod travel and delivery too  
small - position spiral spring upwards

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 19.04.94  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 076 954  
  
Injection pump  
Pump designation : PES6M55C320RS203  
EP type number : 0 410 056 982  
Governor  
Governor design. : RSF315/2500M70-10  
Governor no. : 0 420 021 175

Customer-spec. information  
Customer : MB-PKW

Engine : OM606

1st version kW : 100.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 1 688 901 111

Opening  
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80  
: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.30...13.40

Del.quantity cm3/ : 3.85...3.95

100 s: (3.75...4.05)

Spread cm3 : 0.25

100 s: (0.3)

2nd speed rpm : 290.0

Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 0.8...0.9

100 s: (0.7...1.15)

Spread cm3 : 0.1

100 s: (0.15)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1100

Del.quantity : 38.5...39.5

1000 : (37.5...40.5)

Spread cm3 : 2.50

1000 : (3.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.50...8.90

Speed rpm : 2700

4th rack travel in: 3150

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.90...2.00

## LOW IDLE 1

Control lever

position degrees: 8.5...12.5

Setting point w/out bumper spring

Speed rpm : 290  
Rack travel in mm : 7.3

#### Testing:

Speed rpm : 220  
Minimum rack travel: 8.50  
Speed rpm : 290  
Rack travel in mm : 7.20...7.40  
Rack travel in mm : 3.00  
Speed rpm : 650...750  
Speed rpm : 1100  
Maximum rack travel: 2.00

#### SET IDLE AUXILIARY SPRING

Speed rpm : 400  
Rack travel in mm : 5.90...6.10  
: (5.80...6.20)

#### TORQUE CONTROL

##### Torque control curve - 1st version

1st speed rpm : 1100  
Rack travel in m: 13.30...13.40  
2nd speed rpm : 2000  
Rack travel in m: 12.55...12.85  
3rd speed rpm : 2500  
Rack travel in m: 11.95...12.25  
4th speed rpm : 500 \*  
Rack travel in m: 12.35...12.65  
5th speed rpm : 900\*\*  
Rack travel in m: 12.95...13.25

#### Aneroid/Altitude Compensator Test

##### 1st version

Setting  
Speed rpm : 1100  
Pressure hPa : 940  
Rack travel mm : 0.00...0.20

##### Measurement

Speed 1/min : 1100

1st pressure hPa : 900  
Rack travel in m: 0.30...0.50  
2nd pressure hPa : 750  
Rack travel in m: 1.40...1.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1100  
Speed rpm : 2000  
Del.quantity cm<sup>3</sup>/ : 39.5...41.1  
1000 s: (38.5...42.1)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.0)  
Aneroid pressure h: 1100

C07

Speed rpm : 2500  
Del.quantity cm<sup>3</sup>/ : 38.5...40.5  
1000 s: (37.5...41.5)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)  
Aneroid pressure h: 1100  
Speed rpm : 500 \*  
Del.quantity cm<sup>3</sup>/ : 32.5...34.1  
1000 s: (31.5...35.1)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)  
Aneroid pressure h: 1100  
Speed rpm : 900\*\*  
Del.quantity cm<sup>3</sup>/ : 37.0...38.6  
1000 s: (36.0...39.6)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 50.0...0.0  
1000 s: (50.0...0.0)  
Rack travel in mm : 20.10...0.00

#### HIGH IDLE

##### 1st version

Aneroid pressure h: 1100  
Speed rpm : 2700  
Del.quantity cm<sup>3</sup>/ : 18.0...22.0  
1000 s: (17.0...23.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### LOW IDLE

Speed rpm : 290  
Rack travel in mm : 7.20...7.40  
Del.quantity cm<sup>3</sup>/ : 8.0...9.0  
1000 s: (7.5...11.5)  
Spread cm<sup>3</sup> : 1.00  
1000 s: (1.50)

#### SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

##### Control lever at idle stop

Speed rpm : 315  
Rack travel in mm : 12.4...13.8  
Del.quantity cm<sup>3</sup>/ : 30.0...38.0  
1000 s: -  
Current A : 1.8

##### Control lever at full-load stop

Speed rpm : 3000  
Rack travel in mm : 0.00...2.00

Current

short-duration A : 3.0

Starting test

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : -

min. 1000 s: - 1.8 A

Remarks:

: RW-DIFF. STUPSER  
: 50 AUF 40 GRAD 0.2MM  
: BEI N = 500 1/MIN

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.

At n = 290 1/min and pu = 450 mbar

control rod must move briskly to

control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

Start-of-delivery sensor system:

adjustment and blocking with device

KDEP 1077 = 16.8°...17.2°

(16.7...17.3°) angular displacement of

cam following start of delivery of

cylinder no. 1.

Difference in start of delivery between

max. and min. value = max. 1° angular

displacement of cam

\* Setting point for negative torque

control - negative retainer behind

sliding sleeve

\*\* Reference measurement:

Control-rod travel and delivery too

large - position spiral spring

downwards

Control-rod travel and delivery too

small - position spiral spring upwards

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 19.04.94  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 400 076 955

Injection pump  
Pump designation : PES6M55C320RS203  
EP type number : 0 410 056 982  
Governor  
Governor design. : RSF315/2500M76  
Governor no. : 0 420 021 174

Customer-spec. information  
Customer : MB-PKW

Engine : OM606

1st version kW : 100.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 1 688 901 111

Opening  
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80  
: (1.65...1.85)  
Rack travel in mm : 20.00...22.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.30...13.40

Del.quantity cm<sup>3</sup>/ : 3.85...3.95

100 s: (3.75...4.05)

Spread cm<sup>3</sup> : 0.25

100 s: (0.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.4

Del.quantity cm<sup>3</sup>/ : 0.8...0.9

100 s: (0.7...1.05)

Spread cm<sup>3</sup> : 0.1

100 s: (0.15)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1100

Del.quantity : 38.5...39.5

1000 : (37.5...40.5)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

## RATED SPEED

1st version

Control Lever

position degrees: 50...0

3rd rack travel in: 8.50...8.90

Speed rpm : 2700

4th rack travel in: 3150

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.90...2.00

## LOW IDLE 1

Control Lever

position degrees: 8.5...12.5

Setting point w/out bumper spring





Current  
short-duration A : 3.0  
Starting test  
Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : -  
min. 1000 s: - 1.8A

#### TESTING & SETTING

##### RACK TRAVEL SENSOR

Control lever at full load stop  
Speed rpm : ARD  
Rack travel in mm : 1.50...1.90 mm  
Voltage volt : FM = -7.0...-9.0  
volt : N = 1100 1/MIN

#### Remarks:

: RW-DIFF.STUPSER  
: 50 AUJ 40 GRAD 0.2mm  
: N = 500 1/MIN

##### TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.  
With n = 300 1/min. and p<sub>w</sub> = 450 mbar,  
control rod must move quickly to  
control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

\* Setting point for negative torque  
control - negative retainer behind  
sliding sleeve

#### \*\* Reference measurement:

Control-rod travel and delivery too  
large - position spiral spring  
downwards  
Control-rod travel and delivery too  
small - position spiral spring upwards

##### START-OF-DELIVERY ADJUSTMENT

-Start-of delivery adjustment and lock  
after start-of-delivery mean value of  
all cylinders, 16.3...16.7°  
(16.2...16.8°) angular displacement of  
the cam after cylinder 1.

Difference in start of delivery between  
max. and min. value = max. 1° angular  
displacement of cam

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 20.04.94  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 400 076 956  
Injection pump  
Pump designation : PES6M55C320RS181  
EP type number : 0 410 056 983  
Governor  
Governor design. : RSF305/212SM64-20  
Governor no. : 0 420 021 168

Customer-spec. information  
Customer : MB-PKW

Engine : OM603A D35 USA

1st version kW : 110.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80  
: (1.65...1.85)  
Rack travel in mm : 20.00...22.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.10...14.20

Del.quantity cm<sup>3</sup>/ : 5.9...6.0

100 s: (5.8...6.1)

Spread cm<sup>3</sup> : 0.25

100 s: (0.3)

2nd speed rpm : 280.0

Rack travel in mm : 5.1...5.3 FD366

Del.quantity cm<sup>3</sup>/ : 0.8...0.9

100 s: (0.5...0.9)

Spread cm<sup>3</sup> : 0.1

100 s: (0.15)

3rd speed rpm : 280

Rack travel in mm : 5.6...5.8

Del.quantity cm<sup>3</sup>/ : < FD 366

100 s: 0.5...0.6

Spread cm<sup>3</sup> : 0.1

100 s: (0.15)

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1000

Aneroid pressure h: 1900

Del.quantity : 59.0...60.0

1000 : (58.0...61.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9.30...9.70

Speed rpm : 2300

4th rack travel in: 2700

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.90...2.00

#### LOW IDLE 1

Control lever

position degrees: 8...12

Setting point w/out bumper spring

Speed rpm : 280

Rack travel in mm : 5.2 FD 366

Testing:

Speed rpm : 200

Minimum rack trave: 7.00

Speed rpm : 280

Rack travel in mm : 5.10...5.30

Speed rpm : 1000

Maximum rack trave: 2.00

#### LOW IDLE 2

Control lever

position degrees: 8.0...12.0

Setting point w/out bumper spring

Speed rpm : 280

Rack travel in mm : 5.6 FD <366

Testing:

Speed rpm : 200

Rack travel in mm : MIN.7.0

Speed rpm : 280

Rack travel in mm : 5.6...5.8

Speed rpm : 1000

Rack travel in mm : 2.0

#### SET IDLE AUXILIARY SPRING

Speed rpm : 400

Rack travel in mm : 4.7.4.8FD366

: 4.3...4.5 FD<366

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 14.10...14.20

2nd speed rpm : 1600

Rack travel in m: 13.20...13.40

3rd speed rpm : 2000

Rack travel in m: 12.35...12.65

Aneroid/Altitude

Compensator Test

#### 1st version

Setting

Speed rpm : 1000

Pressure hPa : 1600

Rack travel mm : 0.80...1.20

Measurement

Speed 1/min : 1000

1st pressure hPa : 1100

C13

Rack travel in m: 3.40...3.60

2nd pressure hPa : 750

Rack travel in m: 5.20...5.60

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1900

Speed rpm : 1600

Del.quantity cm3/ : 56.5...58.1

1000 s: (55.5...59.1)

Spread cm3 : 2.50

1000 s: (3.0)

Aneroid pressure h: 1900

Speed rpm : 2000

Del.quantity cm3/ : 54.0...56.0

1000 s: (53.0...57.0)

Spread cm3 : 2.50

1000 s: (3.00)

Aneroid pressure h: 1100

Speed rpm : 1000

Del.quantity cm3/ : 40.0...41.0

1000 s: (39.0...42.0)

Spread cm3 : 2.50

1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 52.0...0.0

1000 s: (52.0...0.0)

Rack travel in mm : 20.10...0.00

#### HIGH IDLE

##### 1st version

Aneroid pressure h: 1900

Speed rpm : 2300

Rack travel in mm : 9.30...9.70

Del.quantity cm3/ : 37.0...41.0

1000 s: (36.0...42.0)

Spread cm3 : 2.50

1000 s: (3.00)

#### LOW IDLE

Speed rpm : 280

Rack travel in mm : 5.7 / 5.2 < FD

Del.quantity cm3/ : 8.5-9.0 (5-9.5)

1000 s: 5.5-6.5 FD<366

Spread cm3 : (5...9.5)

1000 s: -

#### SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop  
Speed rpm : 305  
Rack travel in mm : 11.6...13.0  
Del. quantity cm<sup>3</sup>/ : 41.0...49.0  
1000 s : -  
Current A : 1.8

Control lever at full-load stop  
Speed rpm : 2700  
Rack travel in mm : 0.0...2.0  
Current  
short-duration A : 3.0  
Starting test  
Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : -  
min. 1000 s : - 1.8 A

Remarks:

Testing and adjusting the control-rod-travel sensor with evaluation circuit

KDEP-F400

Receiving inspection

Shift control lever to full-load stop.  
Set 13.5 V at stabilizer. Apply  
1900 hPa at ALDA. Run up to speed of  
1000 1/min; a voltage of 2.487...2.547  
(2.457...2.577) V must be displayed  
on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel  
delivery at 24.0...25.0 (23.0...26.0)  
cm<sup>3</sup>/1000 strokes with control lever.  
Shift control-rod-travel sensor until  
U = 1.633...1.639 (1.635...1.637) V is  
indicated. Tighten fastening screws  
with 1...2 Nm. Control lever to full-  
load stop; voltage value of 2.487...  
2.547 V must be attained.

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.  
At n = 290 1/min and p<sub>u</sub> = 450 mbar  
control rod must move briskly to  
control-rod travel = 0 mm

Sliding sleeve pre-travel =  
5,25...5,75 mm

CHECKING THE IDLE-SPEED AUXILIARY  
SPRING CUTOFF

-Control-lever position 35,5°, max.

0.2 mm control-rod travel deduction  
allowable after switchover point (of  
starting cam) up to 1000 1/min.  
-Control-lever position 33.0°,  
control-rod travel deduction must be  
greater than 0.2 mm after switchover  
point (of starting cam).

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 = 16.8°...17.2°  
(16.7...17.3°) angular displacement of  
cam following start of delivery of  
cylinder no. 1.

Difference in start of delivery between  
max. and min. value = max. 1° angular  
displacement of cam

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 3.0 W42  
Edition : 02.05.94  
Replaces : 15.10.91  
Test oil : ISO-4113

Combination no. : 0 400 076 957

Injection pump  
Pump designation : PES6M55C320RS171  
EP type number : 0 410 056 989  
Governor  
Governor design. : RSF315/Z300M72-5  
Governor no. : 0 420 021 165

Customer-spec. information  
Customer : MB-PKW

Engine : OM603-ECE MJ90

1st version kW : 80.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10  
: (1.95...2.15)  
Rack travel in mm : 20.00...22.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 3.1...3.2

100 s: (3.0...3.3)

Spread cm<sup>3</sup> : 0.25

100 s: (0.3)

2nd speed rpm : 300.0

Rack travel in mm : 6.8...7.0

Del. quantity cm<sup>3</sup>/ : 0.65...0.75

100 s: (0.6...1.05)

Spread cm<sup>3</sup> : 0.1

100 s: (0.15)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 31.0...32.0

1000 : (30.0...33.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.60...9.00

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.2...1.3

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

### Testing:

## SET IDLE AUXILIARY SPRING

## TORQUE CONTROL

## Aneroid/Altitude Compensator Test

## FUEL DELIVERY CHARACTERISTICS

cylinder no. 1.

Difference in start of delivery between  
max. and min. value = max. 1° angular  
displacement of cam

#### TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With  $n = 300$  1/min. and  $p_u = 450$  mbar,  
control rod must move quickly to  
control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

#### CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.

0.2 mm control-rod travel deduction  
allowable after switchover point (of  
starting cam) up to 1000 1/min.

Control-lever position 46.5°,  
control-rod travel deduction must be  
greater than 0.2 mm after switchover  
point (of starting cam).

#### ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD)

Control lever on full-load stop. At  $n$   
= 1000 min.  $-1$ ,  $I = 2.5$  A, difference  
in delivery referenced to full-load  
delivery (6.3...8.3) ccm/1000 strokes.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 3.0 W39  
 Edition : 10.05.94  
 Replaces : 29.10.92  
 Test oil : ISO-4113  
 Combination no. : 0 400 076 959  
 Injection pump  
 Pump designation : PES6M55C320RS180  
 EP type number : 0 410 056 984  
 Governor  
 Governor design. : RSF315/2300M64-17  
 Governor no. : 0 420 021 157

Customer spec. information  
 Customer : MB-PKW

Engine : OM603A-D/A (KAT)

1st version kW : 110.0

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness : 6.00X2.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80  
 : (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.70...13.80

Del. quantity cm<sup>3</sup>/ : 5.1...5.2

100 s: (5.0...5.3)

Spread cm<sup>3</sup> : 0.2

100 s: (0.3)

2nd speed rpm : 290.0

Rack travel in mm : 5.7...5.9

Del. quantity cm<sup>3</sup>/ : 0.5...0.6

100 s: (0.5...0.9)

Spread cm<sup>3</sup> : 0.1

100 s: (0.1)

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del. quantity : 51.0...52.0

1000 : (50.0...53.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.4...8.8

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever

position degrees: 8...12

Setting point w/out bumper spring

Speed rpm : 290

Rack travel in mm : 5.8

## Testing:

Speed rpm : 200

Minimum rack trave: 7.00



Speed rpm : 290  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.50  
Speed rpm : 520...620  
Speed rpm : 1000  
Maximum rack travel : 1.80

#### SET IDLE AUXILIARY SPRING

Speed rpm : 360  
Rack travel in mm : 4.2...4.4  
: (4.1...4.5)

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000  
Rack travel in m: 13.70...13.80  
2nd speed rpm : 1600  
Rack travel in m: 13.00...13.20  
3rd speed rpm : 2200  
Rack travel in m: 12.20...12.40

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 1600  
Rack travel mm : 0.30...0.70

#### Measurement

Speed 1/min : 1000

1st pressure hPa : 1050  
Rack travel in m: 3.40...3.60  
2nd pressure hPa : 750  
Rack travel in m: 4.90...5.30

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1850  
Speed rpm : 1600  
Del.quantity cm3/ : 50.0...51.5  
1000 s: (49.0...52.5)

Spread cm3 : 2.50  
1000 s: (3.0)

Aneroid pressure h: 1850  
Speed rpm : 2200  
Del.quantity cm3/ : 48.5...50.5  
1000 s: (47.5...51.5)

Spread cm3 : 2.50  
1000 s: (3.00)

Aneroid pressure h: 1050  
Speed rpm : 1000  
Del.quantity cm3/ : 33.0...34.0  
1000 s: (32.0...35.0)

Spread cm3 : 2.50  
1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 52.0...0.0  
1000 s: (52.0...0.0)  
Rack travel in mm : 20.10...0.00

#### HIGH IDLE

#### 1st version

Aneroid pressure h: 1850  
Speed rpm : 2500  
Rack travel in mm : 8.40...8.80  
Del.quantity cm3/ : 29.0...33.0  
1000 s: (28.0...34.0)  
Spread cm3 : 2.50  
1000 s: (3.00)

#### LOW IDLE

Speed rpm : 290  
Rack travel in mm : 5.70...5.90  
Del.quantity cm3/ : 5.5...6.5  
1000 s: (5.0...9.5)  
Spread cm3 : 1.00  
1000 s: (1.50)

#### SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

#### Control lever at idle stop

Speed rpm : 315  
Rack travel in mm : (13.1...14.5)  
Del.quantity cm3/ : -  
1000 s: (43.0...51.0)  
Current A : 1.8

#### Control lever at full-load stop

Speed rpm : 2950  
Rack travel in mm : 0.0...1.0  
Current short-duration A : 3.0  
Starting test  
Speed rpm : 100  
Del.quantity cm3/ : -  
min. 1000 s: - 1.8 A

Remarks:

Sliding sleeve pre-travel = 6.5 mm

#### CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 35,5°, max.

0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

-Control-lever position 33.0°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

#### CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.

At  $n = 290$  1/min and  $p_u = 450$  mbar control rod must move briskly to control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 16.8°...17.2° (16.7°...17.3°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Pin projection = 16.60...16.70 mm

#### Locomotive

##### Testing and adjusting the control-rod-travel sensor with evaluation circuit KDEP-P400

##### Receiving inspection

Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.457...2.517 (2.427...2.547) V must be displayed on the digital voltmeter.

##### Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 21.0...22.0 (20.0...23.0) ccn/1000 strokes with control lever. Shift control-rod-travel sensor until  $U = 1.633...1.639$  (1.635...1.637) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 2.457...2.517 V must be attained.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 2.5 F1  
Edition : 02.05.94  
Replaces : 30.03.87  
Test oil : ISO-4113

Combination no. : 0 400 076 960

Injection pump  
Pump designation : PES6M55C320RS179  
EP type number : 0 410 056 985  
Governor  
Governor design. : RSF315/2000M65-6  
Governor no. : 0 420 021 161

Customer-spec. information  
Customer : MB-PKW

Engine : OM603A-D35 GW

1st version kW : 100.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 1 688 901 111

Opening  
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80  
: (1.65...1.85)  
Rack travel in mm : 20.00...22.00  
Firing order : 1- 5- 3- 6- 2- 4

C21

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.60...13.70

Del. quantity cm<sup>3</sup>/ : 5.8...5.9

100 s: (5.7...6.0)

Spread cm<sup>3</sup> : 0.25

100 s: (0.3)

2nd speed rpm : 290.0

Rack travel in mm : 5.6...5.8

Del. quantity cm<sup>3</sup>/ : 0.65...0.75

100 s: (0.6...1.05)

Spread cm<sup>3</sup> : 0.1

100 s: (0.15)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1900

Del. quantity : 58.0...59.0

1000 : (57.0...60.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7.2...7.6

Speed rpm : 2300

4th rack travel in: 2700

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.9...2.0

## LOW IDLE 1

Control lever

position degrees: 8...12

Setting point w/out bumper spring

Speed rpm : 290  
Rack travel in mm : 5.7

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.00  
Speed rpm : 290  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 3.00  
Speed rpm : 500...600  
Speed rpm : 1000  
Maximum rack travel: 1.90

#### SET IDLE AUXILIARY SPRING

Speed rpm : 400  
Rack travel in mm : 4.2...4.4  
: (4.1...4.5)

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000  
Rack travel in m: 13.60...13.70  
2nd speed rpm : 1600  
Rack travel in m: 12.60...12.80  
3rd speed rpm : 2000  
Rack travel in m: 11.50...11.70

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 1600  
Rack travel mm : 0.20...0.60

#### Measurement

Speed 1/min : 1000

1st pressure hPa : 1100  
Rack travel in m: 2.85...3.05  
2nd pressure hPa : 750  
Rack travel in m: 4.60...5.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1900  
Speed rpm : 1600  
Del.quantity cm<sup>3</sup>/ : 54.5...56.1  
1000 s: (53.5...57.1)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.0)  
Aneroid pressure h: 1900  
Speed rpm : 2000  
Del.quantity cm<sup>3</sup>/ : 50.0...52.0  
1000 s: (49.0...53.0)

Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)  
Aneroid pressure h: 1100  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 41.0...42.0  
1000 s: (39.0...43.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 52.0...0.0  
1000 s: (52.0...0.0)  
Rack travel in mm : 20.10...0.00

#### HIGH IDLE

1st version  
Aneroid pressure h: 1900  
Speed rpm : 2300  
Rack travel in mm : 7.20...7.60  
Del.quantity cm<sup>3</sup>/ : 26.5...30.5  
1000 s: (25.5...31.5)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### LOW IDLE

Speed rpm : 290  
Rack travel in mm : 5.60...5.80  
Del.quantity cm<sup>3</sup>/ : 6.5...7.5  
1000 s: (6.0...10.5)  
Spread cm<sup>3</sup> : 1.00  
1000 s: (1.50)

#### SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

#### Control lever at idle stop

Speed rpm : 315  
Rack travel in mm : 11.8...13.2  
Del.quantity cm<sup>3</sup>/ : 44.0...52.0  
1000 s: -  
Current A : 1.8

#### Control lever at full-load stop

Speed rpm : 2700  
Rack travel in mm : 0.0...1.0  
Current  
short-duration A : 3.0  
Starting test  
Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : -  
min. 1000 s: - 1.8 A

Remarks:

:  
Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 =  $16.8^{\circ} \dots 17.2^{\circ}$   
( $16.7 \dots 17.3^{\circ}$ ) angular displacement of  
cam following start of delivery of  
cylinder no. 1.

Difference in start of delivery between  
max. and min. value = max.  $1^{\circ}$  angular  
displacement of cam

CHECKING THE PNEUMATIC SHUTOFF BOX  
-Control lever up against idle stop.  
At  $n = 290$  1/min and  $p_u = 450$  mbar  
control rod must move briskly to  
control-rod travel = 0 mm

\* Sliding sleeve pre-travel = 5.2 mm

CHECKING THE IDLE-SPEED AUXILIARY  
SPRING CUTOFF  
-Control-lever position  $35.5^{\circ}$ , max.  
0.2 mm control-rod travel deduction  
allowable after switchover point (of  
starting cam) up to 1000 1/min.  
-Control-lever position  $33.0^{\circ}$ ,  
control-rod travel deduction must be  
greater than 0.2 mm after switchover  
point (of starting cam).

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 3.0 W29  
Edition : 02.05.94  
Replaces : 16.10.91  
Test oil : ISO-4113

Combination no. : 0 400 076 964

Injection pump  
Pump designation : PES6M55C320RS171  
EP type number : 0 410 056 989  
Governor  
Governor design. : RSF315/2300M72-4  
Governor no. : 0 420 021 138

Customer-spec. information  
Customer : MB-PKW

Engine : OM603-ECE MJ90

1st version kW : 80.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 1 688 901 111

Opening  
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness : 6.00X2.00X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10  
(1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 3.2...3.3

100 s: (3.1...3.4)

Spread cm<sup>3</sup> : 0.25

100 s: (0.3)

2nd speed rpm : 300.0

Rack travel in mm : 6.8...7.0

Del. quantity cm<sup>3</sup>/ : 0.7...0.8

100 s: (0.7...1.1)

Spread cm<sup>3</sup> : 0.1

100 s: (0.1)

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 32.0...33.0

1000 : (31.0...34.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.50...8.90

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.2...1.3

## LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring



cam following start of delivery of cylinder no. 1.  
Difference in start of delivery between max. and min. value = max.  $1^\circ$  angular displacement of cam

#### TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.  
With  $n = 300$  1/min. and  $p_u = 450$  mbar, control rod must move quickly to control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

#### CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position  $49^\circ$ , max.  
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.  
Control-lever position  $46.5^\circ$ , control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 3.0 W30  
Edition : 02.05.94  
Replaces : 15.10.91  
Test oil : ISO-4113

Combination no. : 0 400 076 965

Injection pump  
Pump designation : PES6M55C320RS174  
EP type number : 0 410 056 988  
Governor  
Governor design. : RSF315/2300M72-3  
Governor no. : 0 420 021 137

Customer spec. information  
Customer : MB-PKW

Engine : OM603-Abgl. M90

1st version kW : 76.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 1 688 901 111

Opening  
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80  
: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.40...12.50

Del. quantity cm<sup>3</sup>/ : 3.2...3.3

100 s: (3.1...3.4)

Spread cm<sup>3</sup> : 0.2

100 s: (0.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.0...7.2

Del. quantity cm<sup>3</sup>/ : 0.7...0.8

100 s: (0.7...1.1)

Spread cm<sup>3</sup> : 0.1

100 s: (0.1)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 32.5...33.5

1000 : (31.5...34.5)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9.10...9.50

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.4...1.5

## LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring



cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max.  $1^\circ$  angular displacement of cam

#### TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With  $n = 300$  1/min. and  $p_u = 450$  mbar, control rod must move quickly to control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

#### CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position  $49^\circ$ , max.

0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control-lever position  $46.5^\circ$ , control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 3.0 W31  
Edition : 01.05.94  
Replaces : 16.10.91  
Test oil : ISO-4113  
  
Combination no. : 0 400 076 966  
  
Injection pump  
Pump designation : PES6M55C320RS174  
EP type number : 0 410 056 988  
Governor  
Governor design. : RSF315/2300M60-27  
Governor no. : 0 420 021 134

Customer-spec. information  
Customer : MB-PKW

Engine : OM603-Abgl. MJ90

1st version kW : 76.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 1 688 901 111

Opening  
pressure, bar : 147...150

Test Lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80  
: (1.65...1.85)  
Rack travel in mm : 20.00...22.00  
Firing order : 1- 5- 3- 6- 2- 4

D02

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 3.2...3.3

100 s: (3.1...3.4)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 290.0

Rack travel in mm : 6.6...6.8

Del.quantity cm3/ : 0.6...0.7

100 s: (0.6...1.0)

Spread cm3 : 0.1

100 s: (0.1)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 32.5...33.5

1000 : (31.5...34.5)

Spread cm3 : 2.50

1000 : (3.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9.1...9.5

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER

### POSITION

Speed rpm : 1000

Rack travel in mm : 1.4...1.5

## LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

### Testing:

```
Speed          rpm      : 220
Minimum rack travel: 7.00
Speed          rpm      : 290
Rack travel in mm : 6.60...6.80
Rack travel in mm : 2.50
Speed          rpm      : 610...710
Speed          rpm      : 1000
Maximum rack travel: 1.50
```

SET IDLE AUXILIARY SPRING

Speed rpm : 360  
Rack travel in mm : 5.2...5.4  
: (5.1...5.5)

## TORQUE CONTROL

```
Torque control curve - 1st version
1st speed   rpm   : 1000
  Rack travel in m: 12.40...12.50
2nd speed   rpm   : 1800
  Rack travel in m: 11.80...12.00
3rd speed   rpm   : 2200
  Rack travel in m: 11.50...11.70
```

## Aneroid/Altitude Compensator Test

```
1st version
Setting
Speed      rpm      : 1000
Pressure   hPa      : 950
Rack travel mm    : 0.00...0.20
```

## Measurement

Speed 1/min : 1000

```
1st pressure hPa : 900
  Rack travel in m: 0.50...0.70
2nd pressure hPa : 750
  Rack travel in m: 1.80...2.20
```

## FUEL DELIVERY CHARACTERISTICS

```

1st version
Aneroid pressure h: 1100
Speed          rpm  : 1800
Del.quantity   cm3/ : 34.5...36.1
                1000 s: (33.5...37.1)
Spread         cm3   : 2.50
                1000 s: (3.0)
Aneroid pressure h: 1100
Speed          rpm  : 2200
Del.quantity   cm3/ : 34.5...36.5
                1000 s: (33.5...37.5)

```

Spread      cm<sup>3</sup> : 2.50  
1000 s: (3.00)

STARTING FUEL DELIVERY

```
Speed          rpm      : 100
Del.quantity   cm3/     : 52.0...0.0
                1000 s: (52.0...0.0)
Rack travel    in mm    : 20.10...0.00
```

HIGH IDLE

```

1st version
Aneroid pressure h: 1100
Speed          rpm   : 2500
Rack travel in mm : 9.10...9.50
Del.quantity cm3/  : 22.0...26.0
                  1000 s: (21.0...27.0)
Spread         cm3   : 2.50
                  1000 s: (3.00)

```

LOW IDLE

```
Speed      rpm      : 290
Rack travel in mm : 6.60...6.80
Del.quantity cm3/   : 6.5...7.5
           1000 s: (6.0...10.5)
Spread     cm3      : 1.00
           1000 s: (1.50)
```

## SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

```
Control lever at idle stop
Speed          rpm      : 315
Rack travel in mm : 12.8...14.2
Del.quantity cm3/  : -
                1000 s : -
Current A      : 1.8
```

```
Control lever at full-load stop
Speed      rpm      : 2950
Rack travel in mm : 0.0...1.0
Current
  short-duration A : 3.0
Starting test
Speed      rpm      : 100
Del.quantity cm3/   : -
min.       1000 s  : -   1.8 A
```

## Remarks:

Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 =  $16.8^{\circ} \dots 17.2^{\circ}$   
( $16.7 \dots 17.3^{\circ}$ ) angular displacement of  
cam following start of delivery of

cylinder no. 1.

Difference in start of delivery between  
max. and min. value = max.  $1^\circ$  angular  
displacement of cam

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.

At  $n = 290$  1/min and  $p_u = 450$  mbar  
control rod must move briskly to  
control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY  
SPRING CUTOFF

-Control-lever position  $49^\circ$ , max.

0.2 mm control-rod travel deduction  
allowable after switchover point (of  
starting cam) up to 1000 1/min.

Control-lever position  $46.5^\circ$ ,  
control-rod travel deduction must be  
greater than 0.2 mm after switchover  
point (of starting cam).

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 3.0 W23  
Edition : 02.05.94  
Replaces : 16.10.91  
Test oil : ISO-4113

Combination no. : 0 400 076 971

Injection pump  
Pump designation : PES6M55C32ORS171  
EP type number : 0 410 056 989  
Governor  
Governor design. : RSF315/2300M60-8  
Governor no. : 0 420 021 114

Customer-spec. information  
Customer : MB-PKW

Engine : OM603-ECE

1st version kW : 80.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 1 688 901 111

Opening  
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10  
: (1.95...2.15)  
Rack travel in mm : 20.00...22.00  
Firing order : 1- 5- 3- 6- 2- 4

DOS

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 3.2...3.3

100 s: (3.1...3.4)

Spread cm<sup>3</sup> : 0.2

100 s: (0.3)

2nd speed rpm : 290.0

Rack travel in mm : 6.7...6.9

Del. quantity cm<sup>3</sup>/ : 0.65...0.75

100 s: (0.60...1.05)

Spread cm<sup>3</sup> : 0.1

100 s: (0.1)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 32.0...33.0

1000 : (31.0...34.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.5...8.9

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.2...1.3

## LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 290  
Rack travel in mm : 6.7

#### Testing:

Speed rpm : 220  
Minimum rack travel: 8.50  
Speed rpm : 290  
Rack travel in mm : 6.70...6.90  
Rack travel in mm : 2.00  
Speed rpm : 620...720  
Speed rpm : 1000  
Maximum rack travel: 1.30

#### SET IDLE AUXILIARY SPRING

Speed rpm : 360  
Rack travel in mm : 5.0...5.2  
                                  : (4.9...5.3)

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000  
Rack travel in mm : 12.00...12.10  
2nd speed rpm : 1400  
Rack travel in mm : 11.70...11.90  
3rd speed rpm : 2200  
Rack travel in mm : 11.40...11.60

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 1000  
Pressure hPa : 950  
Rack travel mm : 0.00...0.20

##### Measurement

Speed 1/min : 1000

1st pressure hPa : 900  
Rack travel in mm : 0.50...0.70  
2nd pressure hPa : 750  
Rack travel in mm : 1.80...2.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 1400  
Del.quantity cm<sup>3</sup>/ : 32.0...33.6  
                                  1000 s: (31.0...34.6)  
Spread cm<sup>3</sup> : 2.50  
                                  1000 s: (3.0)  
Aneroid pressure h: 1100  
Speed rpm : 2200  
Del.quantity cm<sup>3</sup>/ : 34.0...36.0  
                                  1000 s: (33.0...37.0)

Spread cm<sup>3</sup> : 2.50  
                                  1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 52.0...0.0  
                                  1000 s: (52.0...0.0)  
Rack travel in mm : 20.10...0.00

#### HIGH IDLE

##### 1st version

Aneroid pressure h: 1100  
Speed rpm : 2500  
Rack travel in mm : 8.50...8.90  
Del.quantity cm<sup>3</sup>/ : 22.0...26.0  
                                  1000 s: (21.0...27.0)  
Spread cm<sup>3</sup> : 2.50  
                                  1000 s: (3.00)

#### LOW IDLE

Speed rpm : 290  
Rack travel in mm : 6.70...6.90  
Del.quantity cm<sup>3</sup>/ : 6.5...7.5  
                                  1000 s: (6.0...10.5)  
Spread cm<sup>3</sup> : 1.00  
                                  1000 s: (1.50)

#### SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

##### Control lever at idle stop

Speed rpm : 315  
Rack travel in mm : 12.3...13.7  
Del.quantity cm<sup>3</sup>/ : 29.0...37.0  
                                  1000 s: -  
Current A : 1.8

##### Control lever at full-load stop

Speed rpm : 2950  
Rack travel in mm : 0.0...1.0  
Current short-duration A : 3.0  
Starting test  
Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : -  
min. 1000 s: - 1.8 A

#### Remarks:

:  
Start-of-delivery sensor system:  
adjustment and blocking with device  
KDEP 1077 = 19.3°...19.7°  
(19.2...19.8°) angular displacement of  
cam following start of delivery of



cylinder no. 1.

Difference in start of delivery between  
max. and min. value = max.  $1^\circ$  angular  
displacement of cam

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.

At  $n = 290$  1/min and  $p_u = 450$  mbar

control rod must move briskly to

control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY  
SPRING CUTOFF

-Control-lever position  $49^\circ$ , max.

0.2 mm control-rod travel deduction  
allowable after switchover point (of  
starting cam) up to 1000 1/min.

Control-lever position  $46.5^\circ$ ,  
control-rod travel deduction must be  
greater than 0.2 mm after switchover  
point (of starting cam).

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE  
Edition : 24.07.92  
Replaces : 03.92  
Test oil : ISO-4113  
  
Combination no. : 0 400 876 395  
  
Injection pump  
Pump designation : PES6A100D410RS2676  
EP type number : 9 410 230 023  
Governor  
Governor design. : RSV425...1100A2C2161  
-1L  
Governor no. : 9 420 234 133

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466T

1st version kW : 120.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 457 413 010  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 1 688 901 101  
  
Opening  
pressure, bar : 207...210  
  
Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 32...34

D08

Prestroke mm : 2.45...2.55  
: (2.40...2.60)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  

---

Rack travel in mm : 9.40...9.50  

---

Del.quantity cm3/ : 9.8...10.0  

---

100 s: (9.6...10.2)  

---

Spread cm3 : 0.4  

---

100 s: (0.6)  

---

2nd speed rpm : 425.0  
Rack travel in mm : 5.3...5.5  
Del.quantity cm3/ : 2.0...2.4  
100 s: (1.8...2.7)  
Spread cm3 : 0.6  
100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 700  
Del.quantity : 98.5...100.5  
1000 : (96.5...102.5)  
Spread cm3 : 4.00  
1000 : (6.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 49...57

Testing:

1st rack travel in: 8.40  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1205...1215  
3rd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever  
position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 4.9

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.30...5.50

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 9.40...9.40  
2nd speed rpm : 750  
Rack travel in m: 10.70...10.90

Aneroid/Altitude

Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 10.60...10.80

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.20...9.40  
2nd pressure hPa : 80  
Rack travel in m: 9.40...9.80  
3rd pressure hPa : 175  
Rack travel in m: 10.30...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 750  
Del.quantity cm3/ : 116.0...119.0  
1000 s: (114.0...121.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm3/ : 86.0...90.0  
1000 s: (84.0...92.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.40  
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (185.0...215.0)

LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.30...5.50  
Del.quantity cm3/ : 20.5...24.5  
1000 s: (18.0...27.0)  
Spread cm3 : 6.00  
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE23746

Start-of-delivery mark = 15.5° after  
start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 04.94  
Replaces : 02.94  
Test oil : ISO-4113  
Combination no. : 0 402 046 825A  
Injection pump  
Pump designation : PES6P110A720LS3282  
EP type number : 0 412 016 736  
Governor  
Governor design. : RQ300/1100PA800-2  
Governor no. : 0 421 801 593

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM447 h

1st version kW : 157.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
: (4.35...4.55)  
Rack travel in mm : 19.00...21.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 13.6...13.8

100 s: (13.3...14.0)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300

Rack travel in mm : 8.85...9.45

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.4

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.50...14.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 136.0...138.0

1000 : (133.5...140.5)

Spread cm3 : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Control lever

position degrees: 97.0...105.0

Setting point:

Speed rpm : 600

Rack travel in mm : 14.0

Testing:

1st rack travel in: 12.15  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1300  
Speed rpm : 0.00...2.40

#### LOW IDLE 1

Control lever

position degrees: 74.0...82.0

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 7.3

#### Testing:

Speed rpm : 200

Minimum rack travel: 8.80

Speed rpm : 300

Rack travel in mm : 7.20...7.40

Rack travel in mm : 2.00

Speed rpm : 325...365

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 113.0...116.0

1000 s: (110.0...119.0)

Spread cm<sup>3</sup> : 5.00

1000 s: (9.00)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 12.15

Speed rpm : 1140...1150

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 04.94  
Replaces : 02.94  
Test oil : ISO-4113  
Combination no. : 0 402 046 826  
Injection pump  
Pump designation : PES6P110A720LS3282-1  
EP type number : 0 412 016 746  
Governor  
Governor design. : RQ300/1100PA786-3  
Governor no. : 0 421 801 706

Cust. part no. : 0200747702

Customer spec. information  
Customer : MERCEDES-BENZ

Engine : OM447 h

1st version kW : 157.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
: (4.35...4.55)  
Rack travel in mm : 19.00...21.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 13.6...13.8

100 s: (13.3...14.0)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300

Rack travel in mm : 8.0...8.6

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.4

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.70...14.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 136.0...138.0

1000 : (133.5...140.5)

Spread cm3 : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Control lever

position degrees: 106.0...114.0

Setting point:

Speed rpm : 600

Rack travel in mm : 13.2

Testing:

1st rack travel in: 12.15  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1300  
Speed rpm : 0.00...2.40

#### LOW IDLE 1

Control lever  
position degrees: 75.0...83.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.80  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 330...370

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 113.0...116.0  
1000 s: (110.0...119.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (9.00)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 12.15  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

#### Remarks:

:  
Adjust full-load delivery by turning  
temperature-dependent excess-fuel stop  
for starting (TAS).

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 04.94  
Replaces : 02.94  
Test oil : ISO-4113  
  
Combination no. : 0 402 046 831A  
  
Injection pump  
Pump designation : PES6P110A720LS3282  
EP type number : 0 412 016 736  
Governor  
Governor design. : RQ300/1100PA1015  
Governor no. : 0 421 801 613

Customer spec. information  
Customer : MERCEDES-BENZ

Engine : OM447 h

1st version kW : 157.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
: (4.35...4.55)  
Rack travel in mm : 19.00...21.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.10...13.20

Del.quantity cm<sup>3</sup>/ : 13.6...13.8

100 s: (13.3...14.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 300

Rack travel in mm : 8.85...9.45

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.50...14.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 136.0...138.0

1000 : (133.5...140.5)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Control lever

position degrees: 97.0...105.0

Setting point:

Speed rpm : 600

Rack travel in mm : 14.0

Testing:



1st rack travel in: 12.15  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1300  
Speed rpm : 0.00...2.00

#### LOW IDLE 1

Control lever  
position degrees: 74.0...82.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.3

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.80  
Speed rpm : 300  
Rack travel in mm : 7.20...7.40  
Rack travel in mm : 2.00  
Speed rpm : 325...365

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 113.0...116.0  
1000 s: (110.0...119.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (9.00)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 12.15  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

Set pneumatic shutoff device to  
control-rod stop = 0.5...1.5 mm  
control-rod travel at 4.5 bar  
atmospheric pressure.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : LIE  
Edition : 26.06.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 076 748  
Injection pump  
Pump designation : PE6P110A72ORS3305  
EP type number : 0 412 016 740  
Governor  
Governor design. : RSV300...1100P1A555  
Governor no. : 0 421 833 379

Customer-spec. information  
Customer : LIEBHERR

Engine : D 926 TI

1st version kW : 210.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000  
Rack travel in mm : 13.90...14.10  
Del. quantity cm<sup>3</sup>/ : 18.3...18.5  
100 s: (18.0...18.7)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

2nd speed rpm : 400.0  
Rack travel in mm : 5.8...6.0  
Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
100 s: (0.7...1.8)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Aneroid pressure h: 1300  
Del. quantity : 183.0...185.0  
1000 : (180.5...187.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 96...102

Testing:  
1st rack travel in: 12.90  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1075...1105  
3rd rack travel in: 4.00  
Speed rpm : 1090...1120

4th rack travel in: 1260  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 69...77  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 520...580

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 13.90...14.10  
2nd speed rpm : 500  
Rack travel in m: 13.90...14.10

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 550  
Pressure hPa : 1300  
Rack travel mm : 13.90...14.10

#### Measurement

Speed 1/min : 550

1st pressure hPa : —  
Rack travel in m: 12.20...12.40  
2nd pressure hPa : 640  
Rack travel in m: 13.40...13.60  
3rd pressure hPa : 510  
Rack travel in m: 12.60...12.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: —  
Speed rpm : 550  
Del.quantity cm3/ : 149.0...151.0  
1000 s: (146.5...153.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 12.90  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

D17

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (131.0...159.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm3/ : 10.0...16.0  
1000 s: (7.5...18.5)  
Spread cm3 : 4.50  
1000 s: (7.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : LIE  
Edition : 11.01.93  
Replaces : 08.92  
Test oil : ISO-4113  
  
Combination no. : 0 402 076 748  
  
Injection pump  
Pump designation : PES6P110A720RS3305  
EP type number : 0 412 016 740  
Governor  
Governor design. : RSV300...1100P1A555  
Governor no. : 0 421 833 379

Customer spec. information  
Customer : LIEBHERR

Engine : D 926 TI

1st version kW : 210.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 15.40...15.50

Del. quantity cm<sup>3</sup>/ : 18.5...18.7

100 s: (18.2...18.9)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 7.3...7.5

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1300

Del. quantity : 185.0...187.0

1000 : (182.5...189.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 96...104

Testing:

1st rack travel in: 14.40

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1080...1110  
3rd rack travel in: 4.00  
Speed rpm : 1115...1145  
4th rack travel in: 1260  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 69...77  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 6.9  
Speed rpm : 400  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.00  
Speed rpm : 560...620

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 15.40...15.50  
2nd speed rpm : 500  
Rack travel in m: 15.40...15.60

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 550  
Pressure hPa : 1300  
Rack travel mm : 15.40...15.50

#### Measurement

Speed 1/min : 550

1st pressure hPa : -  
Rack travel in m: 13.40...13.60  
2nd pressure hPa : 510  
Rack travel in m: 13.70...13.80  
3rd pressure hPa : 640  
Rack travel in m: 14.90...15.10

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 550  
Del.quantity cm3/ : 149.0...151.0  
1000 s: (146.5...153.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 14.40

Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 145.0...165.0  
1000 s: (141.0...169.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 7.30...7.50  
Del.quantity cm3/ : 10.0...16.0  
1000 s: (7.5...18.5)  
Spread cm3 : 4.50  
1000 s: (7.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR  
Edition : 19.04.94  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 076 750  
  
Injection pump  
Pump designation : PES6P120A720RS3311  
EP type number : 0 412 026 760  
Governor  
Governor design. : RSV400...105CP2A557  
Governor no. : 0 421 833 394

Customer-spec. information  
Customer : FNI-GEOTECH

Engine : P 396

1st version kW : 179  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0.8

Test Lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.55...3.65  
: (3.50...3.70)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 400.0  
Rack travel in mm : 5.1...5.3  
Del.quantity cm3/ : 2.3...2.9  
100 s: (2.0...3.2)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : 3.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Aneroid pressure h: 1500  
Del.quantity : 182.0...184.0  
1000 : (179.0...187.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 90.0...98.0

Testing:

1st rack travel in: 10.45  
Speed rpm : 1093...1098  
2nd rack travel in: 4.00  
Speed rpm : 1148...1163  
3rd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1320  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 67.0...75.0  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.7  
Speed rpm : 400  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 530...630

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 750  
Rack travel in m: 12.40...12.60  
3rd speed rpm : 935  
Rack travel in m: 11.80...12.00

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1500  
Rack travel mm : 12.40...12.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 950  
Rack travel in m: 12.20...12.30

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1500  
Speed rpm : 1050  
Del.quantity cm3/ : 182.0...184.0  
1000 s: (179.0...187.0)  
Spread cm3 : 5.0  
1000 s: (9.0)  
Aneroid pressure h: 1500  
Speed rpm : 750

Del.quantity cm3/ : 227.0...233.0  
1000 s: (224.0...236.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 129.0...131.0  
1000 s: (126.0...134.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.45  
Speed rpm : 1093...1098

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 180.0...210.0  
1000 s: (176.0...214.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.10...5.30  
Del.quantity cm3/ : 23.0...29.0  
1000 s: (20.0...32.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

Latching at 0.75 bar...0.85 bar.

Unlatching at 0.40 bar...0.50 bar

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR  
Edition : 19.04.94  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 076 751  
Injection pump  
Pump designation : PES6P120A720R53311  
EP type number : 0 412 026 760  
Governor  
Governor design. : RSV400...1050P2A557-1  
Governor no. : 0 421 833 396

Customer-spec. information  
Customer : FNH-GEOTECH

Engine : P 396

1st version kW : 157  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0.8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness : 8.00X2.50X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.55...3.65  
: (3.50...3.70)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.30...10.40

Del. quantity cm<sup>3</sup>/ : 15.2...15.4

100 s: (14.9...15.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 400.0  
Rack travel in mm : 4.9...5.1  
Del. quantity cm<sup>3</sup>/ : 1.8...2.1  
100 s: (1.2...2.4)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1500

Del. quantity : 152.5...154.5

1000 : (149.5...157.5)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 92.0...100.0



#### Testing:

1st rack travel in: 9.35  
Speed rpm : 1093...1098  
2nd rack travel in: 4.00  
Speed rpm : 1148...1163  
3rd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1320  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 70.0...78.0  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.5  
Speed rpm : 400  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 520...620

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 9.80...9.90  
2nd speed rpm : 750  
Rack travel in m: 11.10...11.30  
3rd speed rpm : 910  
Rack travel in m: 11.90...11.10

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1500  
Rack travel mm : 11.10...11.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 900  
Rack travel in m: 10.80...11.90

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1500  
Speed rpm : 1050  
Del.quantity cm3/ : 152.5...154.5  
1000 s: (149.5...157.5)  
Spread cm3 : 5.0  
1000 s: (9.0)  
Aneroid pressure h: 1500  
Speed rpm : 750

D23

Del.quantity cm3/ : 191.0...197.0  
1000 s: (188.0...200.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 118.0...120.0  
1000 s: (115.0...123.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.35  
Speed rpm : 1093...1098

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 180.0...210.0  
1000 s: (176.0...214.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 4.90...5.10  
Del.quantity cm3/ : 15.0...21.0  
1000 s: (12.0...24.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

Latching at 0.75 bar...0.85 bar.

Unlatching at 0.40 bar...0.50 bar

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 05.94  
 Replaces : 02.94  
 Test oil : ISO-4113

Combination no. : 0 402 646 783

Injection pump  
 Pump designation : PE6P120A320LS7858  
 EP type number : 0 412 626 875  
 Governor  
 Governor design. : RGV300...1050PA1065  
 -1  
 Governor no. : 0 421 814 068

Cust. part no. : 0250740002

Customer spec. information  
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1050

---

Rack travel in mm : 11.20...11.30

---

Del. quantity cm<sup>3</sup>/ : 17.2...17.4

---

100 s: (16.9...17.7)

---

Spread cm<sup>3</sup> : 0.5

---

100 s: (0.9)

---

2nd speed rpm : 300

Rack travel in mm : 4.90...5.50

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 0.93...1.33

2nd speed rpm : 370  
 travel mm : 1.75...2.25

3rd speed rpm : 420  
 travel mm : 2.18...2.68

4th speed rpm : 750  
 travel mm : 4.62...5.12

5th speed rpm : 1107  
 travel mm : 9.65...9.95

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1210  
Rack travel in mm : 8.80...11.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Aneroid pressure h: 700  
Del.quantity : 172.0...174.0  
1000 : (169.0...177.0)  
Spread cm3 : 5.00  
1000 : (9.00)

RATED SPEED

1st version  
Control lever  
position degrees: 98...106

Testing:  
1st rack travel in: 10.25  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1135...1165  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 62...70  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.20

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.10  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION  
Speed rpm : 300...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 400  
Pressure hPa : 200  
Rack travel mm : 10.50...10.60

Measurement  
Speed 1/min : 400

1st pressure hPa : 700  
Rack travel in m: 11.20...11.30  
2nd pressure hPa : 250  
Rack travel in m: 10.75...10.95

3rd pressure hPa : -  
Rack travel in m: 10.15...10.45

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 550  
Del.quantity cm3/ : 162.0...166.0  
1000 s: (159.0...169.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 200  
Speed rpm : 400  
Del.quantity cm3/ : 117.5...120.5  
1000 s: (114.5...123.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.25  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 125.0...145.0  
1000 s: (121.0...149.0)

Remarks:

:



1st version  
Control lever  
position degrees: 87.0...95.0

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 10.25  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 70.0...78.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.20

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.20  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 360...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 400  
Pressure hPa : 200  
Rack travel mm : 10.50...10.60

Measurement  
Speed 1/min : 400

1st pressure hPa : 700  
Rack travel in m: 11.20...11.30  
2nd pressure hPa : 250  
Rack travel in m: 10.80...11.00  
3rd pressure hPa : -  
Rack travel in m: 10.15...10.45

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700

D27

Speed rpm : 550  
Del.quantity cm<sup>3</sup>/ : 162.0...166.0  
1000 s: (159.0...169.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 200  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 117.5...120.5  
1000 s: (114.5...123.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.25  
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 270.0...290.0  
1000 s: (266.0...294.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : 04.94  
Test oil : ISO-4113  
  
Combination no. : 0 402 646 789  
  
Injection pump  
Pump designation : PE6P120A32ULS7346  
EP type number : 0 412 626 865  
Governor  
Governor design. : RQ300/1050PA1031-10  
Governor no. : 0 421 801 679

Cust. part no. : 0240740402

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.30...12.40

Del. quantity cm3/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.4...6.0

Del. quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: 103...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 800

Del. quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 91.0...99.0

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.35  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever  
position degrees: 72.0...80.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.7

Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 360...400

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 400  
Pressure hPa : 350  
Rack travel mm : 11.00...11.10

Measurement

Speed 1/min : 400

1st pressure hPa : 800  
Rack travel in m: 12.30...12.40  
2nd pressure hPa : 200  
Rack travel in m: 10.60...10.80  
3rd pressure hPa : -  
Rack travel in m: 9.90...10.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800

E01

Speed rpm : 550  
Del.quantity cm3/ : 195.0...199.0  
1000 s: (192.0...202.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 350  
Speed rpm : 400  
Del.quantity cm3/ : 148.5...151.5  
1000 s: (145.5...154.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 126.0...128.0  
1000 s: (123.0...131.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.35  
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 270.0...290.0  
1000 s: (266.0...294.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : 02.94  
Test oil : ISO-4113  
Combination no. : 0 402 646 793  
Injection pump  
Pump designation : PE6P120A320LS7846  
EP type number : 0 412 626 865  
Governor  
Governor design. : RQ300/1050PA1030-11  
Governor no. : 0 421 801 728

Cust. part no. : 0230749502

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.30...12.40

Del.quantity cm<sup>3</sup>/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.4...6.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6  
100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1050

Aneroid pressure h: 800

Del.quantity : 201.0...203.0  
1000 : (198.0...206.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED



1st version  
Control lever  
position degrees: 89.0...97.0

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 11.35  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 70.0...78.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.7

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 360...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 400  
Pressure hPa : 350  
Rack travel mm : 11.00...11.10

Measurement  
Speed 1/min : 400

1st pressure hPa : 800  
Rack travel in m: 12.30...12.40  
2nd pressure hPa : 200  
Rack travel in m: 10.60...10.80  
3rd pressure hPa : -  
Rack travel in m: 9.90...10.20

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 800  
Speed rpm : 550  
Del.quantity cm3/ : 195.0...199.0  
1000 s: (192.0...202.0)

Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 350  
Speed rpm : 400  
Del.quantity cm3/ : 148.5...151.5  
1000 s: (145.5...154.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 126.0...128.0  
1000 s: (123.0...131.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.35  
Speed rpm : 1090...1106

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 265.0...295.0  
1000 s: (261.0...299.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : 02.94  
Test oil : ISO-4113

Combination no. : 0 402 646 793

Injection pump  
Pump designation : PE6P120A320LS7846  
EP type number : 0 412 626 865  
Governor  
Governor design. : RQ300/1050PA1030-8  
Governor no. : 0 421 801 673

Cust. part no. : 0230749502

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.30...12.40

Del.quantity cm<sup>3</sup>/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.4...6.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 800

Del.quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 89.0...97.0

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 11.35  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 70.0...78.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.7

Testing:  
Speed rpm : 200  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 360...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 400  
Pressure hPa : 350  
Rack travel mm : 11.00...11.10

Measurement  
Speed 1/min : 400

1st pressure hPa : 800  
Rack travel in m: 12.30...12.40  
2nd pressure hPa : 200  
Rack travel in m: 10.60...10.80  
3rd pressure hPa : -  
Rack travel in m: 9.90...10.20

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 800  
Speed rpm : 550  
Del.quantity cm3/ : 195.0...199.0  
1000 s: (192.0...202.0)

Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 350  
Speed rpm : 400  
Del.quantity cm3/ : 148.5...151.5  
1000 s: (145.5...154.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 126.0...128.0  
1000 s: (123.0...131.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.35  
Speed rpm : 1090...1106

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 40.0...70.0  
1000 s: (36.0...74.0)  
Rack travel in mm : 9.90...10.30

Remarks:

Note remarks

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x1000

RATED SPEED

1st version  
Control lever  
position degrees: 89.0...97.0

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 11.35  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 70.0...78.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.7

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 360...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 400  
Pressure hPa : 350  
Rack travel mm : 11.45...11.55

Measurement  
Speed 1/min : 400

1st pressure hPa : 800  
Rack travel in m: 12.30...12.40  
2nd pressure hPa : 200  
Rack travel in m: 10.60...10.80  
3rd pressure hPa : -  
Rack travel in m: 10.10...10.40

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 800  
Speed rpm : 550  
Del.quantity cm<sup>3</sup>/ : 195.0...199.0  
1000 s: (192.0...202.0)

Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 350  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 148.5...151.5  
1000 s: (145.5...154.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.5...136.5  
1000 s: (131.5...139.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.35  
Speed rpm : 1090...1106

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 265.0...295.0  
1000 s: (261.0...299.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 04.94  
Replaces : 02.94  
Test oil : ISO-4113

Combination no. : 0 402 646 793A

Injection pump  
Pump designation : PE6P120A320LS7846  
EP type number : 0 412 626 865  
Governor  
Governor design. : RQ300/1050PA1030-8  
Governor no. : 0 421 801 673

Cust. part no. : 0230749502

Customer spec. information  
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

E08

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1050  
Rack travel in mm : 12.30...12.40  
Del. quantity cm<sup>3</sup>/ : 20.1...20.3  
100 s: (19.8...20.6)  
Spread cm<sup>3</sup> : 0.5  
100 s: (0.9)

2nd speed rpm : 300  
Rack travel in mm : 5.40...6.00  
Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm<sup>3</sup> : 0.6  
100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Aneroid pressure h: 800  
Del. quantity : 201.0...203.0  
1000 : (198.0...206.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 89.0...97.0

Setting point:  
Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.35  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever

position degrees: 70.0...78.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.7

Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 360...400

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 400  
Pressure hPa : 350  
Rack travel mm : 11.45...11.55

Measurement

Speed 1/min : 400

1st pressure hPa : 800  
Rack travel in m: 12.30...12.40  
2nd pressure hPa : 200  
Rack travel in m: 10.60...10.80  
3rd pressure hPa : -  
Rack travel in m: 10.10...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800  
Speed rpm : 550  
Del.quantity cm3/ : 195.0...199.0  
1000 s: (192.0...202.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 350  
Speed rpm : 400  
Del.quantity cm3/ : 148.5...151.5  
1000 s: (145.5...154.5)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm3/ : 134.5...136.5  
1000 s: (131.5...139.5)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.35  
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 40.0...70.0  
1000 s: (36.0...74.0)  
Rack travel in mm : 9.90...10.30

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 05.94  
 Replaces : 02.94  
 Test oil : ISO-4113

Combination no. : 0 402 646 795

Injection pump  
 Pump designation : PE6P120A320LS7858-1  
 EP type number : 0 412 626 911  
 Governor  
 Governor design. : RGV300...1050PA1033  
 -8  
 Governor no. : 0 421 814 027

Cust. part no. : 0230749002

Customer spec. information  
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1050

---

Rack travel in mm : 11.20...11.30

---

Del. quantity cm<sup>3</sup>/ : 17.2...17.4

---

100 s: (16.9...17.7)

---

Spread cm<sup>3</sup> : 0.5

---

100 s: (0.9)

---

2nd speed rpm : 300

Rack travel in mm : 4.90...5.50

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 0.52...0.92

2nd speed rpm : 575  
 travel mm : 4.27...4.77

3rd speed rpm : 625  
 travel mm : 4.72...5.22

4th speed rpm : 840  
 travel mm : 5.94...6.44

5th speed rpm : 1109  
 travel mm : 8.27...8.57

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1



Speed rpm : 1170  
Rack travel in mm : 8.80...11.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050  
Aneroid pressure h : 700  
Del.quantity : 172.0...174.0  
1000 : (169.0...177.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

RATED SPEED

1st version  
Control lever  
position degrees: 117.0..125.0

Setting point:

Speed rpm : 1170  
Rack travel in mm : 10.1

Testing:

1st rack travel in: 10.25  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever  
position degrees: 79...87  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.20

Testing:

Speed rpm : 200  
Minimum rack travel: 8.10  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 300...400

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 400  
Pressure hPa : 200  
Rack travel mm : 10.50...10.60

Measurement

Speed 1/min : 400

1st pressure hPa : 700  
Rack travel in m: 11.20...11.30  
2nd pressure hPa : 250  
Rack travel in m: 10.80...11.00  
3rd pressure hPa : -  
Rack travel in m: 10.15...10.45

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 550  
Del.quantity cm<sup>3</sup>/ : 162.0...166.0  
1000 s: (159.0...169.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 200  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 117.5...120.5  
1000 s: (114.5...123.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.25  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...145.0  
1000 s: (121.0...149.0)

Remarks:

:

**Note remarks**

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x1000

**RATED SPEED**

1st version  
Control lever  
position degrees: 88.0...96.0

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 10.75  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 70.0...78.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

Testing:  
Speed rpm : 200  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 360...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 400  
Pressure hPa : 800  
Rack travel mm : 11.70...11.80

Measurement  
Speed 1/min : 400

1st pressure hPa : 350  
Rack travel in m: 11.20...11.30  
2nd pressure hPa : 200  
Rack travel in m: 10.50...10.70  
3rd pressure hPa : -  
Rack travel in m: 9.60...9.90

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 800  
Speed rpm : 550  
Del.quantity cm3/ : 182.0...186.0  
1000 s: (179.0...189.0)

Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 350  
Speed rpm : 400  
Del.quantity cm3/ : 148.5...151.5  
1000 s: (145.5...154.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 126.0...128.0  
1000 s: (123.0...131.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.75  
Speed rpm : 1090...1106

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : 02.94  
Test oil : ISO-4113

Combination no. : 0 402 646 797

Injection pump  
Pump designation : PE6P120A320LS7858  
EP type number : 0 412 626 875  
Governor  
Governor design. : R0300/1050PA1030-13  
Governor no. : 0 421 801 730

Cust. part no. : 0230748902

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.20...11.30

Del.quantity cm<sup>3</sup>/ : 17.2...17.4

100 s: (16.9...17.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300  
Rack travel in mm : 4.90...5.50  
Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm<sup>3</sup> : 0.6  
100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110

Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Aneroid pressure h: 700  
Del.quantity : 172.0...174.0  
1000 : (169.0...177.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 87..0...95.0

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 10.25  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 70.0...78.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

Testing:  
Speed rpm : 200  
Minimum rack trave: 7.60  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 360...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 400  
Pressure hPa : 200  
Rack travel mm : 10.45...10.65

Measurement  
Speed 1/min : 400

1st pressure hPa : 700  
Rack travel in m: 11.20...11.30  
2nd pressure hPa : 250  
Rack travel in m: 10.80...11.00  
3rd pressure hPa : -  
Rack travel in m: 10.15...10.45

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 550  
Del.quantity cm3/ : 162.0...166.0  
1000 s: (159.0...169.0)

Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 200  
Speed rpm : 400  
Del.quantity cm3/ : 117.5...120.5  
1000 s: (114.5...123.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.25  
Speed rpm : 1090...1106

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 265.0...295.0  
1000 s: (261.0...299.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 04.94  
Replaces : 02.94  
Test oil : ISO-4113

Combination no. : 0 402 646 797

Injection pump  
Pump designation : PE6P120A320LS7858  
EP type number : 0 412 626 875  
Governor  
Governor design. : RQ300/1050PA1030-4  
Governor no. : 0 421 801 664

Cust. part no. : 0230748902

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 17.0...17.2

100 s: (16.7...17.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.90...5.50

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del.quantity : 170.0...172.0

1000 : (167.0...175.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 87..0...95.0

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 10.15  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 70.0...78.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.60  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 360...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 400  
Pressure hPa : 200  
Rack travel mm : 10.45...10.65

Measurement  
Speed 1/min : 400

1st pressure hPa : 700  
Rack travel in m: 11.10...11.20  
2nd pressure hPa : 250  
Rack travel in m: 10.80...11.00  
3rd pressure hPa : -  
Rack travel in m: 10.15...10.45

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 550  
Del.quantity cm3/ : 160.0...164.0  
1000 s: (157.0...167.0)

Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 200  
Speed rpm : 400  
Del.quantity cm3/ : 117.5...120.5  
1000 s: (114.5...123.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.15  
Speed rpm : 1090...1106

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 40.0...70.0  
1000 s: (36.0...74.0)  
Rack travel in mm : 9.90...10.30

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 04.94  
 Replaces : 12.93  
 Test oil : ISO-4113

Combination no. : 0 402 646 916X

Injection pump  
 Pump designation : PE6P120A320LS7836-10  
 EP type number : 0 412 626 854  
 Governor  
 Governor design. : RQV300...1050PA797  
 -17  
 Governor no. : 0 421 813 884

Cust. part no. : 0200740302

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1050

---

Rack travel in mm : 13.15...13.25

---

Del.quantity cm3/ : 20.1...20.3

---

100 s: (19.8...20.6)

---

Spread cm3 : 0.5

---

100 s: (0.9)

---

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.11...1.41

2nd speed rpm : 637  
 travel mm : 4.93...5.43

3rd speed rpm : 830  
 travel mm : 6.02...6.52

4th speed rpm : 1107  
 travel mm : 8.28...8.68

5th speed rpm : 1218  
 travel mm : 9.75...10.25

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1



Speed rpm : 1125  
Rack travel in mm : 14.90...17.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050  
Aneroid pressure h: 1400  
Del.quantity : 201.5...203.5  
1000 : (198.5...206.5)  
Spread cm3 : 5.00  
1000 : (9.00)

RATED SPEED

1st version  
Control Lever  
position degrees: 118...126

Testing:

1st rack travel in: 12.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever  
position degrees: 80...88

Testing:

Speed rpm : 200  
Minimum rack trave: 7.60  
Speed rpm : 300  
Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

Speed rpm : 300...500

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 400  
Pressure hPa : 1400  
Rack travel mm : 13.15...13.25

Measurement

Speed 1/min : 400

1st pressure hPa : 250  
Rack travel in m: 11.10...11.30 \*  
2nd pressure hPa : 400  
Rack travel in m: 12.00...12.20 \*  
5th pressure hPa : -  
Rack travel in m: 10.10...10.40

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400  
Speed rpm : 800  
Del.quantity cm3/ : 202.0...206.0  
1000 s: (199.0...209.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 350  
Speed rpm : 400  
Del.quantity cm3/ : 148.5...151.5  
1000 s: (145.5...154.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 129.0...131.0  
1000 s: (126.0...134.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

\* Value only applies to initial setting of LDA spring.

Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : 12.93  
Test oil : ISO-4113

Combination no. : 0 402 646 940X

Injection pump  
Pump designation : PE6P120A320LS7836-10  
EP type number : 0 412 626 854  
Governor  
Governor design. : RG300/950PA971-9  
Governor no. : 0 421 801 732

Cust. part no. : 0200742202

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness : 8.00X2.50X1000  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 13.15...13.25

Del.quantity cm<sup>3</sup>/ : 20.3...20.5

100 s: (20.0...20.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Aneroid pressure h: 1400

Del.quantity : 203.5...205.5

1000 : (200.5...208.5)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 92.0...100.0

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 12.20  
Speed rpm : 950...1006  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1200  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 70.0...78.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.6

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.40  
Speed rpm : 300  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 370...410

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 400  
Pressure hPa : 1400  
Rack travel mm : 13.15...13.25

Measurement  
Speed 1/min : 400

1st pressure hPa : 200  
Rack travel in m: 11.10...11.30 \*  
2nd pressure hPa : 350  
Rack travel in m: 12.00...12.20 \*  
5th pressure hPa : -  
Rack travel in m: 10.30...10.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1400  
Speed rpm : 800  
Del.quantity cm3/ : 202.0...206.0  
1000 s: (199.0...209.0)

Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 350  
Speed rpm : 400  
Del.quantity cm3/ : 148.5...151.5  
1000 s: (145.5...154.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.20  
Speed rpm : 990...1006

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 205.0...235.0  
1000 s: (201.0...239.0)  
\* Value only applies to initial setting  
of LDA spring.  
Ultimate setting of the LDA spring is  
performed by way of the appropriate  
setting given in the delivery curve.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 04.94  
Replaces : 06.92  
Test oil : ISO-4113

Combination no. : 0 402 646 953X

Injection pump  
Pump designation : PE6P120A320LS7836-10  
EP type number : 0 412 626 854  
Governor  
Governor design. : RQ300/950PA971-8  
Governor no. : 0 421 801 625

Cust. part no. : 0200742002

Customer spec. information  
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 12.65...12.75

Del.quantity cm<sup>3</sup>/ : 18.7...18.9

100 s: (18.4...19.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.30...5.90

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 950

Aneroid pressure h: 1400

Del.quantity : 187.5...189.5

1000 : (184.5...192.5)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 92.0...100.0

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 11.70  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1100  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 70.0...78.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.6

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.40  
Speed rpm : 300  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 370...410

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 400  
Pressure hPa : 200  
Rack travel mm : 10.95...11.05 \*

Measurement  
Speed 1/min : 400

1st pressure hPa : 1400  
Rack travel in m: 12.65...12.75  
2nd pressure hPa : -  
Rack travel in m: 10.60...10.90

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1400  
Speed rpm : 950  
Del.quantity cm3/ : 187.5...189.5  
1000 s: (184.5...192.5)  
Spread cm3 : 5.00  
1000 s: (9.0)  
Aneroid pressure h: 1400

Speed rpm : 800  
Del.quantity cm3/ : 186.0...190.0  
1000 s: (183.0...193.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 200  
Speed rpm : 400  
Del.quantity cm3/ : 117.5...120.5  
1000 s: (114.5...123.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 990...1006

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 10.30...10.60

\* Value only applies to initial setting  
of LDA spring.  
Ultimate setting of the LDA spring is  
performed by way of the appropriate  
setting given in the delivery curve.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 04.94  
Replaces : 12.93  
Test oil : ISO-4113

Combination no. : 0 402 646 958X

Injection pump  
Pump designation : PE6P120A320LS7836-10  
EP type number : 0 412 626 854  
Governor  
Governor design. : RQV300...950PA797-33  
Governor no. : 0 421 813 958

Cust. part no. : 0200742102

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 33...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 638 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 12.65...12.75

Del.quantity cm3/ : 18.7...18.9

100 s: (18.4...19.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.30...5.90

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50

2nd speed rpm : 780

travel mm : 6.10...6.60

3rd speed rpm : 1008

travel mm : 8.30...8.80

4th speed rpm : 1092

travel mm : 11.00...10.30

5th speed rpm : 1190

travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1020  
Rack travel in mm : 15.20...17.80

#### FULL LOAD DELIV. AT FULL LOAD STOP

##### 1st version

Speed rpm : 950  
Aneroid pressure h: 1400  
Del.quantity : 187.5...189.5  
1000 : (184.5...192.5)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

##### 1st version

Control lever  
position degrees: 114...122

##### Testing:

1st rack travel in: 11.70  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 78...86

##### Testing:

Speed rpm : 200  
Minimum rack trave: 7.40  
Speed rpm : 300  
Rack travel in mm : 5.50...5.70

#### CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude  
Compensator Test

##### 1st version

##### Setting

Speed rpm : 400  
Pressure hPa : 200  
Rack travel mm : 10.95...11.05 \*

##### Measurement

Speed 1/min : 400

1st pressure hPa : 1400  
Rack travel in m: 12.65...12.75  
2nd pressure hPa : -  
Rack travel in m: 10.60...10.90

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1400  
Speed rpm : 800  
Del.quantity cm3/ : 186.0...190.0  
1000 s: (183.0...193.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 200  
Speed rpm : 400  
Del.quantity cm3/ : 117.5...120.5  
1000 s: (114.5...123.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 200.0...220.0  
1000 s: (196.0...224.0)

\* Value only applies to initial setting of LDA spring.  
Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 04.94  
Replaces : 02.94  
Test oil : ISO-4113

Combination no. : 0 402 646 976

Injection pump  
Pump designation : PE6P120A320LS7846  
EP type number : 0 412 626 865  
Governor  
Governor design. : RQ300/1050PA1031  
Governor no. : 0 421 801 642

Cust. part no. : 0230740902

Customer spec. information  
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 33...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.95...13.05

Del.quantity cm3/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.90...5.50

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 230.0...232.0

1000 : (227.0...235.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED



1st version  
Control lever  
position degrees: 93.0...101.0

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.00  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever  
position degrees: 70.0...78.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

Testing:

Speed rpm : 200  
Minimum rack travel: 7.10  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 380...420

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 400  
Pressure hPa : 550  
Rack travel mm : 12.20...12.30

Measurement

Speed 1/min : 400

1st pressure hPa : 1000  
Rack travel in m: 12.95...13.50  
2nd pressure hPa : 300  
Rack travel in m: 10.90...11.10  
3rd pressure hPa : -  
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

E27

Speed rpm : 1050  
Del.quantity cm3/ : 226.0...230.0  
1000 s: (223.0...233.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 189.5...192.5  
1000 s: (186.5...195.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 131.0...133.0  
1000 s: (128.0...136.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 270.0...290.0  
1000 s: (266.0...294.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 04.94  
 Replaces : 02.94  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 977  
 Injection pump  
 Pump designation : PE6P120A320LS7846  
 EP type number : 0 412 626 865  
 Governor  
 Governor design. : RQ300/1G50PA103C-1  
 Governor no. : 0 421 801 641

Cust. part no. : 0230741002

Customer spec. information  
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.95...13.05

Del. quantity cm<sup>3</sup>/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300  
 Rack travel in mm : 4.90...5.50

Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s: (0.7...1.9)

Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: 108...110

Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 1000  
 Del. quantity : 230.0...232.0  
 1000 : (227.0...235.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 93.0...101.0

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 12.00  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 67.0...75.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

Testing:  
Speed rpm : 200  
Minimum rack trave: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 360...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 400  
Pressure hPa : 550  
Rack travel mm : 12.20...12.30

Measurement  
Speed 1/min : 400

1st pressure hPa : 1000  
Rack travel in m: 12.95...13.05  
2nd pressure hPa : 300  
Rack travel in m: 10.90...11.10  
3rd pressure hPa : -  
Rack travel in m: 10.20...10.50

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 1050  
Del.quantity cm3/ : 226.0...230.0  
1000 s: (223.0...233.0)

Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 189.5...192.5  
1000 s: (186.5...195.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 131.0...133.0  
1000 s: (128.0...136.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.00  
Speed rpm : 1090...1106

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 10.20...10.50

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : 02.94  
Test oil : ISO-4113  
  
Combination no. : 0 402 646 977  
  
Injection pump  
Pump designation : PE6P120A320LS7846  
EP type number : 0 412 626 865  
Governor  
Governor design. : RQ300/1050PA1030-14  
Governor no. : 0 421 801 731

Cust. part no. : 0230741002

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kw : 230.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.95...13.05

Del.quantity cm<sup>3</sup>/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.90...5.50

Del.quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 230.0...232.0

1000 : (227.0...235.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 93.0...101.0

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 12.00  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 67.0...75.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 360...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 400  
Pressure hPa : 550  
Rack travel mm : 12.20...12.30

Measurement  
Speed 1/min : 400

1st pressure hPa : 1000  
Rack travel in m: 12.95...13.05  
2nd pressure hPa : 300  
Rack travel in m: 10.90...11.10  
3rd pressure hPa : -  
Rack travel in m: 10.20...10.50

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 1050  
Del.quantity cm3/ : 226.0...230.0  
1000 s: (223.0...233.0)

Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 189.5...192.5  
1000 s: (186.5...195.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 131.0...133.0  
1000 s: (128.0...136.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.00  
Speed rpm : 1090...1106

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 265.0...295.0  
1000 s: (261.0...299.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : 02.94  
Test oil : ISO-4113

Combination no. : 0 402 646 979

Injection pump  
Pump designation : PE6P120A320LS7846  
EP type number : 0 412 626 865  
Governor  
Governor design. : RQ300/950PA1032-9  
Governor no. : 0 421 801 733

Cust. part no. : 0150745602

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.95...13.05

Del.quantity cm3/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.90...5.50

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 230.0...232.0

1000 : (227.0...235.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 91.0...99.0

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 11.90  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 66.0...74.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 360...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 400  
Pressure hPa : 550  
Rack travel mm : 12.20...12.30

Measurement  
Speed 1/min : 400

1st pressure hPa : 1000  
Rack travel in m: 12.95...13.05  
2nd pressure hPa : 300  
Rack travel in m: 10.90...11.10  
3rd pressure hPa : -  
Rack travel in m: 10.20...10.50

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 950  
Del.quantity cm3/ : 227.0...231.0  
1000 s: (224.0...234.0)

Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 189.5...192.5  
1000 s: (186.5...195.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 131.0...133.0  
1000 s: (128.0...136.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.90  
Speed rpm : 990...1006

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 265.0...295.0  
1000 s: (261.0...299.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : 04.92  
Test oil : ISO-4113

Combination no. : 0 402 648 817A

Injection pump  
Pump designation : PE8P120A320LS7801-10  
EP type number : 0 412 628 806  
Governor  
Governor design. : RQ300/1050PA762-16  
Governor no. : 0 421 801 620

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 285.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 500  
Rack travel in mm : 12.85...12.95  
Del.quantity cm<sup>3</sup>/ : 17.1...17.3  
100 s: (16.8...17.6)

Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

2nd speed rpm : 300  
Rack travel in mm : 5.90...6.50  
Del.quantity cm<sup>3</sup>/ : 1.3...1.9  
100 s: (1.0...2.2)  
Spread cm<sup>3</sup> : 0.5  
100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 500  
Aneroid pressure h: 1050  
Del.quantity : 171.0...173.0  
1000 : (168.0...176.0)  
Spread cm<sup>3</sup> : 4.00  
1000 : (7.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 93.0...101.0

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0



Testing:  
1st rack travel in: 11.70  
Speed rpm : 1095...1111  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 70.0...78.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.10...6.30  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL  
Dimension a mm : ?  
2nd speed rpm : 1050  
Rack travel in m: 12.50...12.70  
3rd speed rpm : 500  
Rack travel in m: 12.85...12.95

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.35...11.65

Measurement  
Speed 1/min : 500

1st pressure hPa : 220  
Rack travel in m: 11.75...11.85  
2nd pressure hPa : 300  
Rack travel in m: 12.60...12.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1050  
Speed rpm : 1050

Del.quantity cm3/ : 175.5...178.5  
1000 s: (172.5...181.5)  
Spread cm3 : 7.00  
1000 s: (10.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 146.0...148.0  
1000 s: (143.0...151.0)  
Spread cm3 : 7.00  
1000 s: (10.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1095...1111

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 175.0...190.0  
1000 s: (171.0...194.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 05.94  
 Replaces : 02.94  
 Test oil : ISO-4113

Combination no. : 0 402 648 900X

Injection pump  
 Pump designation : PE8P120A320LS7840-10  
 EP type number : 0 412 628 856  
 Governor  
 Governor design. : RQ300/1050PA972-4  
 Governor no. : 0 421 801 560

Cust. part no. : 0190749802

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 700

---

Rack travel in mm : 13.40...13.50

---

Del.quantity cm3/ : 21.1...21.3  
 100 s: (20.8...21.6)

---

Spread cm3 : 0.6  
 100 s: (0.9)

---

2nd speed rpm : 300  
 Rack travel in mm : 6.2...6.8  
 Del.quantity cm3/ : 1.0...1.6  
 100 s: (0.7...1.9)

---

Spread cm3 : 0.8  
 100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: 108...110

Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 750  
 Del.quantity : 211.0...213.0  
 1000 : (208.0...216.0)

---

Spread cm3 : 6.00  
 1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 97.0...105.0

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 11.80  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1250  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 70.0...78.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.90  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL  
Dimension a mm : 0.65  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.70...12.90  
2nd speed rpm : 900  
Rack travel in m: 12.90...13.10  
3rd speed rpm : 700  
Rack travel in m: 13.40...13.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 400  
Pressure hPa : 400  
Rack travel mm : 12.35...12.45

Measurement  
Speed 1/min : 400

1st pressure hPa : 750  
Rack travel in m: 13.40...13.50  
2nd pressure hPa : 200  
Rack travel in m: 11.50...11.70  
3rd pressure hPa : -

F09

Rack travel in m: 11.00...11.30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 750  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 192.0...196.0  
1000 s: (189.0...199.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 400  
Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 156.5...159.5  
1000 s: (153.5...162.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 136.0...138.0  
1000 s: (133.0...141.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1090...1106

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 04.94  
Replaces : 10.93  
Test oil : ISO-4113

Combination no. : 0 402 648 917

Injection pump  
Pump designation : PE8P120A320LS7839-10  
EP type number : 0 412 628 855  
Governor  
Governor design. : RQ300/1050PA993-3  
Governor no. : 0 421 801 601

Cust. part no. : 0210740202

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

F10

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
: (4.95...5.15)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.30 (0.75)  
Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550  
Rack travel in mm : 15.10...15.30  
Del.quantity cm3/ : 26.5...26.7  
100 s: (26.2...27.0)  
Spread cm3 : 0.6  
100 s: (0.9)

2nd speed rpm : 300  
Rack travel in mm : 6.00...6.60  
Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm3 : 0.6  
100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 550  
Aneroid pressure h: 900  
Del.quantity : 265.0...267.0  
1000 : (262.0...270.0)  
Spread cm3 : 6.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 100.0...108.0

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 15.00  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1250  
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever  
position degrees: 72.0...80.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.3

Testing:

Speed rpm : 200  
Minimum rack travel: 7.20  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?  
2nd speed rpm : 1050  
Rack travel in m: 15.90...16.10  
3rd speed rpm : 800  
Rack travel in m: 16.25...16.45

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 550  
Pressure hPa : 900  
Rack travel mm : 15.10...15.30

Measurement

Speed 1/min : 550

1st pressure hPa : 550  
Rack travel in m: 12.95...13.15  
2nd pressure hPa : 250  
Rack travel in m: 10.25...10.55  
3rd pressure hPa : 1100  
Rack travel in m: 15.25...15.55  
4th pressure hPa : 1300  
Rack travel in m: 15.60...15.80  
5th pressure hPa : -  
Rack travel in m: 9.00...9.30 \*

START CUT-OUT

Speed 1/min : 220 (240)

F11

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000  
Speed rpm : 1050  
Del.quantity cm3/ : 271.0...274.0  
1000 s: (268.0...277.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 2000  
Speed rpm : 800  
Del.quantity cm3/ : 283.0...287.0  
1000 s: (280.0...290.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 203.0...206.0  
1000 s: (200.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 15.00  
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 275.0...295.0  
1000 s: (271.0...299.0)

Remarks:

: \* N = 500 1/MIN

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : 02.95  
Test oil : ISO-4113

Combination no. : 0 402 648 926

Injection pump  
Pump designation : PE8P120A320LS7840  
EP type number : 0 412 628 850  
Governor  
Governor design. : RQ300/1050PA972-11  
Governor no. : 0 421 801 739

Cust. part no. : 0220747002

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 419 992 198

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.50...12.70

Del. quantity cm<sup>3</sup>/ : 19.3...19.5

100 s: (19.0...19.8)

Spread cm<sup>3</sup> : 0.8

100 s: (1.1)

2nd speed rpm : 600

Rack travel in mm : 4.20...4.80

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1000

Del. quantity : 193.0...195.0

1000 : (190.0...198.0)

Spread cm<sup>3</sup> : 8.00

1000 : (11.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 92.0...100.0

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 11.60  
Speed rpm : 1090...1105  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1250  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 70.0...78.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.90  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 380...420

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.90...11.20

Measurement  
Speed 1/min : 500

1st pressure hPa : 250  
Rack travel in m: 11.45...11.55  
2nd pressure hPa : 400  
Rack travel in m: 12.40...12.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 1050  
Del.quantity cm3/ : 193.0...195.0  
1000 s: (190.0...198.0)  
Spread cm3 : 8.00  
1000 s: (11.0)

Aneroid pressure h: 1000  
Speed rpm : 800  
Del.quantity cm3/ : 193.0...197.0  
1000 s: (190.0...200.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 136.0...138.0  
1000 s: (133.0...141.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.60  
Speed rpm : 1090...1106

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 180.0...200.0  
1000 s: (176.0...204.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 04.94  
Replaces : 02.94  
Test oil : ISO-4113

Combination no. : 0 402 648 926K

Injection pump  
Pump designation : PE8P120A320LS7840  
EP type number : 0 412 628 850  
Governor  
Governor design. : RQ300/1050PA972-9  
Governor no. : 0 421 801 632

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.55...12.65

Del.quantity cm3/ : 19.3...19.5

100 s: (19.0...19.8)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 600

Rack travel in mm : 4.20...4.80

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.4

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1000

Del.quantity : 193.0...195.0

1000 : (190.0...198.0)

Spread cm3 : 6.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 92.0...100.0



Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 11.60  
Speed rpm : 1090...1105  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1250  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 70.0...78.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.90  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 380...420

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.00...11.30

Measurement  
Speed 1/min : 500

1st pressure hPa : 250  
Rack travel in m: 11.55...11.65  
3rd pressure hPa : 400  
Rack travel in m: 12.45...12.65  
4th pressure hPa : -  
Rack travel in m: 11.00...11.30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 1050  
Del.quantity cm3/ : 193.0...195.0  
1000 s: (190.0...198.0)  
Spread cm3 : 6.00  
1000 s: (9.0)  
Aneroid pressure h: 1000  
Speed rpm : 800

Del.quantity cm3/ : 190.0...194.0  
1000 s: (187.0...197.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 136.0...138.0  
1000 s: (133.0...141.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.60  
Speed rpm : 1090...1106

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 04.94  
Replaces : 02.94  
Test oil : ISO-4113

Combination no. : 0 402 648 927K

Injection pump  
Pump designation : PE8P120A320LS7840  
EP type number : 0 412 628 850  
Governor  
Governor design. : RQV300...1050PA797  
-36  
Governor no. : 0 421 813 984

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.55...12.65

Del.quantity cm<sup>3</sup>/ : 19.3...19.5

100 s: (19.0...19.8)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 600

Rack travel in mm : 4.20...4.80

Del.quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

(B) Setting of injection pump  
with governor

## GUIDE SLEFVE TRAVEL

1st speed rpm : 300  
travel mm : 1.10...1.60

2nd speed rpm : 470  
travel mm : 3.00...3.50

3rd speed rpm : 830  
travel mm : 5.90...6.40

4th speed rpm : 1110  
travel mm : 8.20...8.70

5th speed rpm : 1183  
travel mm : 9.60...10.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

# FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 1050  
Aneroid pressure h: 1000  
Del.quantity : 193.0...195.0  
1000 : (190.0...198.0)  
Spread cm3 : 6.00  
1000 : (9.00)

## RATED SPEED

### 1st version

Control Lever  
position degrees: 118...126

### Testing:

1st rack travel in: 11.60  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control Lever  
position degrees: 82...90  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.50

### Testing:

Speed rpm : 200  
Minimum rack trave: 7.90  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 380...420

## CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude  
Compensator Test

## 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.00...11.30

## Measurement

Speed 1/min : 500

1st pressure hPa : 250  
Rack travel in m: 11.55...11.65  
2nd pressure hPa : 400  
Rack travel in m: 12.45...12.65  
4th pressure hPa : -

F17

Rack travel in m: 11.00...11.30

## START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1050  
Del.quantity cm3/ : 193.0...195.0  
1000 s: (190.0...198.0)  
Spread cm3 : 6.00  
1000 s: (9.0)  
Aneroid pressure h: 1000  
Speed rpm : 800  
Del.quantity cm3/ : 190.0...194.0  
1000 s: (187.0...197.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 136.0...138.0  
1000 s: (133.0...141.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1090...1100

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 180.0...200.0  
1000 s: (176.0...204.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 648 928

Injection pump  
Pump designation : PE8P120A320LS7847-2  
EP type number : 0 412 628 885  
Governor  
Governor design. : RQ300/1050PA1030-19  
Governor no. : 0 421 801 748

Cust. part no. : 0230741202

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

F18

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.75...14.85

Del.quantity cm3/ : 23.8...24.0

100 s: (23.5...24.3)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300  
Rack travel in mm : 5.40...6.00

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200

Del.quantity : 238.0...240.0

1000 : (235.0...243.0)

Spread cm3 : 6.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 95.0...103.0

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever  
position degrees: 69.0...77.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.5

Testing:

Speed rpm : 200  
Minimum rack travel: 7.20  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 400...440

TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 14.75...14.85  
2nd speed rpm : 1050  
Rack travel in m: 13.95...14.15  
3rd speed rpm : 950  
Rack travel in m: 14.10...14.30  
4th speed rpm : 775  
Rack travel in m: 14.70...14.90

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 400  
Pressure hPa : 450  
Rack travel mm : 12.80...13.00

Measurement

Speed 1/min : 400

1st pressure hPa : 1200  
Rack travel in m: 14.75...14.85  
2nd pressure hPa : 300  
Rack travel in m: 11.75...12.05  
3rd pressure hPa : -  
Rack travel in m: 10.15...10.45

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 210.0...214.0  
1000 s: (207.0...217.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 450  
Speed rpm : 400  
Del.quantity cm3/ : 164.5...167.5  
1000 s: (161.5...170.5)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 104.0...106.0  
1000 s: (101.0...109.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 50.0...70.0  
1000 s: (46.0...74.0)  
Rack travel in mm : 9.90...10.90

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 04.94  
Replaces : 02.94  
Test oil : ISO-4113

Combination no. : 0 402 648 928

Injection pump  
Pump designation : PE8P120A320LS7847-2  
EP type number : 0 412 628 885  
Governor  
Governor design. : RQ300/1050PA1030-9  
Governor no. : 0 421 801 717

Cust. part no. : 0230741202

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kw : 280.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

F20

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.75...14.85

Del.quantity cm3/ : 23.8...24.0

100 s: (23.5...24.3)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300  
Rack travel in mm : 5.40...6.00  
Del.quantity cm3/ : 1.0...1.6  
100 s: (0.7...1.9)  
Spread cm3 : 0.6  
100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110

Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 550  
Aneroid pressure h: 1200  
Del.quantity : 238.0...240.0  
1000 : (235.0...243.0)  
Spread cm3 : 6.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 95.0...103.0

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever  
position degrees: 69.0...77.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.5

Testing:

Speed rpm : 200  
Minimum rack travel: 7.20  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 400...440

TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 14.75...14.85  
2nd speed rpm : 1050  
Rack travel in m: 13.95...14.15  
3rd speed rpm : 950  
Rack travel in m: 14.10...14.30  
4th speed rpm : 775  
Rack travel in m: 14.70...14.90

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 400  
Pressure hPa : 450  
Rack travel mm : 12.80...13.00

Measurement

Speed 1/min : 400

1st pressure hPa : 1200  
Rack travel in m: 14.75...14.85  
2nd pressure hPa : 300  
Rack travel in m: 11.75...12.05  
3rd pressure hPa : -  
Rack travel in m: 10.15...10.45

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 210.0...214.0  
1000 s: (207.0...217.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 450  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 164.5...167.5  
1000 s: (161.5...170.5)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 104.0...106.0  
1000 s: (101.0...109.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 50.0...70.0  
1000 s: (46.0...74.0)  
Rack travel in mm : 10.30...11.30

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : 02.94  
Test oil : ISO-4113

Combination no. : 0 402 648 9288

Injection pump  
Pump designation : PE8P120A320LS7847-3  
EP type number : 0 412 628 886  
Governor  
Governor design. : RQ300/1050PA1030-9  
Governor no. : 0 421 801 717

Customer part no. : 0230741202

Customer spec. information  
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

F22

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550  
Rack travel in mm : 14.75...14.85  
Del. quantity cm<sup>3</sup>/ : 23.8...24.0  
100 s : (23.5...24.3)  
Spread cm<sup>3</sup> : 0.6  
100 s : (0.9)

2nd speed rpm : 300  
Rack travel in mm : 5.40...6.00  
Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
100 s : (0.7...1.9)  
Spread cm<sup>3</sup> : 0.6  
100 s : (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 550  
Aneroid pressure h: 1200  
Del. quantity : 238.0...240.0  
1000 : (235.0...243.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 95.0...103.0

Setting point:



Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever  
position degrees: 69.0...77.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.5

Testing:

Speed rpm : 200  
Minimum rack travel: 7.20  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 400...440

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 14.75...14.85  
2nd speed rpm : 1050  
Rack travel in m: 13.95...14.15  
3rd speed rpm : 950  
Rack travel in m: 14.10...14.30  
4th speed rpm : 775  
Rack travel in m: 14.70...14.90

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 400  
Pressure hPa : 450  
Rack travel mm : 12.80...13.00

Measurement

Speed 1/min : 400

1st pressure hPa : 1200  
Rack travel in m: 14.75...14.85  
2nd pressure hPa : 300  
Rack travel in m: 11.75...12.05  
3rd pressure hPa : -  
Rack travel in m: 10.15...10.45

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 210.0...214.0  
1000 s: (207.0...217.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 450  
Speed rpm : 400  
Del.quantity cm3/ : 164.5...167.5  
1000 s: (161.5...170.5)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 104.0...106.0  
1000 s: (101.0...109.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 50.0...70.0  
1000 s: (46.0...74.0)  
Rack travel in mm : 9.80...10.80

Remarks:

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# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : 02.94  
Test oil : ISO-4113

Combination no. : 0 402 648 928C

Injection pump  
Pump designation : PE8P120A320LS7847-2  
EP type number : 0 412 628 885  
Governor  
Governor design. : RQ300/1050PA1030-9  
Governor no. : 0 421 801 717

Cust. part no. : 0230741202

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kw : 280.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

F24

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550  
Rack travel in mm : 14.75...14.85  
Del. quantity cm3/ : 23.8...24.0  
100 s: (23.5...24.3)  
Spread cm3 : 0.6  
100 s: (0.9)

2nd speed rpm : 300  
Rack travel in mm : 5.40...6.00  
Del. quantity cm3/ : 1.0...1.6  
100 s: (0.7...1.9)  
Spread cm3 : 0.6  
100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 550  
Aneroid pressure h: 1200  
Del. quantity : 238.0...240.0  
1000 : (235.0...243.0)  
Spread cm3 : 6.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 95.0...103.0

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever  
position degrees: 69.0...77.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.5

Testing:

Speed rpm : 200  
Minimum rack travel: 7.20  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 400...440

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 14.75...14.85  
2nd speed rpm : 1050  
Rack travel in m: 13.95...14.15  
3rd speed rpm : 950  
Rack travel in m: 14.10...14.30  
4th speed rpm : 775  
Rack travel in m: 14.70...14.90

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 400  
Pressure hPa : 450  
Rack travel mm : 12.80...13.00

Measurement

Speed 1/min : 400

1st pressure hPa : 1200  
Rack travel in m: 14.75...14.85  
2nd pressure hPa : 300  
Rack travel in m: 11.75...12.05  
3rd pressure hPa : -  
Rack travel in m: 10.15...10.45

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 210.0...214.0  
1000 s: (207.0...217.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 450  
Speed rpm : 400  
Del.quantity cm3/ : 164.5...167.5  
1000 s: (161.5...170.5)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 104.0...106.0  
1000 s: (101.0...109.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 50.0...70.0  
1000 s: (46.0...74.0)  
Rack travel in mm : 9.80...10.80

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 04.94  
Replaces : 02.94  
Test oil : ISO-4113

Combination no. : 0 402 648 929

Injection pump  
Pump designation : PE8P120A320LS7847-2  
EP type number : 0 412 628 885  
Governor  
Governor design. : RQV300...950PA1033-1  
2

Governer no. : 0 421 814 093

Cust. part no. : 0230741402

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.75...14.85

Del. quantity cm3/ : 23.8...24.0

100 s: (23.5...24.3)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300  
Rack travel in mm : 5.40...6.00  
Del. quantity cm3/ : 1.0...1.6  
100 s: (0.7...1.9)  
Spread cm3 : 0.8  
100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.44...1.64  
2nd speed rpm : 589  
travel mm : 4.72...5.22  
3rd speed rpm : 790  
travel mm : 6.23...6.73  
4th speed rpm : 1009  
travel mm : 8.32...8.72

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1045  
Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550  
Aneroid pressure h: 1200  
Del.quantity : 238.0...240.0  
1000 : (235.0...243.0)  
Spread cm3 : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 118...126

Testing:  
1st rack travel in: 13.00  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Control lever  
position degrees: 64.0...72.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.50

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.60  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60

#### CONSTANT REGULATION

Speed rpm : 300...450

#### TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 13.95...14.15  
2nd speed rpm : 900  
Rack travel in m: 14.00...14.20  
3rd speed rpm : 875  
Rack travel in m: 14.15...14.35  
4th speed rpm : 800  
Rack travel in m: 14.65...14.85

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 400  
Pressure hPa : 450  
Rack travel mm : 12.80...13.00

#### Measurement

F27

Speed 1/min : 400

1st pressure hPa : 1200  
Rack travel in m: 14.75...14.85  
2nd pressure hPa : 300  
Rack travel in m: 11.75...12.05  
3rd pressure hPa : -  
Rack travel in m: 10.25...10.55

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm3/ : 212.0...216.0  
1000 s: (209.0...219.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 450  
Speed rpm : 400  
Del.quantity cm3/ : 164.5...167.5  
1000 s: (161.5...170.5)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 107.0...109.0  
1000 s: (104.0...112.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 990...1006

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 180.0...220.0  
1000 s: (176.0...224.0)  
Rack travel in mm : 15.05...15.25

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : 02.94  
Test oil : ISO-4113

Combination no. : 0 402 648 929B

Injection pump  
Pump designation : PE8P120A320LS7847-3  
EP type number : 0 412 628 886  
Governor  
Governor design. : RQV300...950PA1033-1  
2  
Governor no. : 0 421 814 093

Cust. part no. : 0230741402

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.30 (0.75)  
Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550

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Rack travel in mm : 14.75...14.85

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Del. quantity cm<sup>3</sup>/ : 23.8...24.0  
100 s : (23.5...24.3)

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Spread cm<sup>3</sup> : 0.6  
100 s : (0.9)

---

2nd speed rpm : 300  
Rack travel in mm : 5.40...6.00  
Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
100 s : (0.7...1.9)  
Spread cm<sup>3</sup> : 0.8  
100 s : (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.24...1.74  
2nd speed rpm : 589  
travel mm : 4.72...5.22  
3rd speed rpm : 790  
travel mm : 6.23...6.73  
4th speed rpm : 1012  
travel mm : 8.31...8.81

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1045  
Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550  
Aneroid pressure h: 1200  
Del.quantity : 238.0...240.0  
1000 : (235.0...243.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 118...126

Testing:  
1st rack travel in: 13.00  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Control lever  
position degrees: 64.0...72.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.50

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.60  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60

#### CONSTANT REGULATION

Speed rpm : 300...450

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 13.95...14.15  
2nd speed rpm : 900  
Rack travel in m: 14.00...14.20  
3rd speed rpm : 875  
Rack travel in m: 14.15...14.35  
4th speed rpm : 800  
Rack travel in m: 14.65...14.85

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 400  
Pressure hPa : 450  
Rack travel mm : 12.80...13.00 \*

Measurement

601

Speed 1/min : 400

1st pressure hPa : 1200  
Rack travel in m: 14.75...14.85  
2nd pressure hPa : 300  
Rack travel in m: 11.75...12.05  
3rd pressure hPa : -  
Rack travel in m: 10.25...10.55

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 212.0...216.0  
1000 s: (209.0...219.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 450  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 164.5...167.5  
1000 s: (161.5...170.5)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 107.0...109.0  
1000 s: (104.0...112.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 990...1006

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 180.0...220.0  
1000 s: (176.0...224.0)  
Rack travel in mm : 15.05...15.55

Remarks:

:

\* Value only applies to initial setting of LDA spring.  
Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 04.94  
Replaces : 02.94  
Test oil : ISO-4113

Combination no. : 0 402 643 930

Injection pump  
Pump designation : PE8P120A320LS7847-3  
EP type number : 0 412 628 886  
Governor  
Governor design. : RQ300/1050PA1031-13  
Governor no. : 0 421 801 719

Cust. part no. : 0230741502

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kw : 280.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

G02

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.30 (0.75)  
Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550  
Rack travel in mm : 14.75...14.85  
Del.quantity cm3/ : 23.8...24.0  
100 s: (23.5...24.3)  
Spread cm3 : 0.6  
100 s: (0.9)

2nd speed rpm : 300  
Rack travel in mm : 5.40...6.00  
Del.quantity cm3/ : 1.0...1.6  
100 s: (0.7...1.9)  
Spread cm3 : 0.6  
100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 550  
Aneroid pressure h: 1200  
Del.quantity : 238.0...240.0  
1000 : (235.0...243.0)  
Spread cm3 : 6.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 95.0...103.0

Setting point:



Speed rpm : 600  
Rack travel in mm : 20.0

#### Testing:

1st rack travel in: 13.00  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Control lever  
position degrees: 70.0...78.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.20  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 400...440

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 14.75...14.85  
2nd speed rpm : 1050  
Rack travel in m: 13.95...14.15  
3rd speed rpm : 950  
Rack travel in m: 14.10...14.30  
4th speed rpm : 775  
Rack travel in m: 14.70...14.90

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 400  
Pressure hPa : 450  
Rack travel mm : 12.80...13.00 \*

#### Measurement

Speed 1/min : 400

1st pressure hPa : 1200  
Rack travel in m: 14.75...14.85  
2nd pressure hPa : 300  
Rack travel in m: 11.75...12.05  
3rd pressure hPa : -  
Rack travel in m: 10.15...10.45

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 210.0...214.0  
1000 s: (207.0...217.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 450  
Speed rpm : 400  
Del.quantity cm3/ : 164.5...167.5  
1000 s: (161.5...170.5)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 104.0...106.0  
1000 s: (101.0...109.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 1090...1106

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 250.0...290.0  
1000 s: (246.0...294.0)

#### Remarks:

:

\* Value only applies to initial setting of LDA spring.  
Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 04.94  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : C 402 648 931  
 Injection pump  
 Pump designation : PE8P120A320LS7847-2  
 EP type number : 0 412 628 885  
 Governor  
 Governor design. : RQ300/950PA1032-10  
 Governor no. : 0 421 801 735  
 Cust. part no. : 0230741302  
 Customer-spec. information  
 Customer : MERCEDES-BENZ  
 Engine : OM402 LA  
 1st version kW : 280.0  
 Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Overflow  
 quantity min. 1/h: 100...120  
 Test nozzle holder  
 assembly : 1 688 901 105  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 075  
 Outside diameter  
 x Wall thickness : 8.00x2.50x1000  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550  
 Rack travel in mm : 14.75...14.85  
 Del. quantity cm<sup>3</sup>/ : 23.8...24.0  
 100 s: (23.5...24.3)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (0.9)  
 2nd speed rpm : 300  
 Rack travel in mm : 5.40...6.00  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s: (0.7...1.9)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: 108...110  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 550  
 Aneroid pressure h: 1200  
 Del. quantity : 238.0...240.0  
 1000 : (235.0...243.0)  
 Spread cm<sup>3</sup> : 6.00  
 1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 93.0...101.0

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 13.0  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 69.0...77.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.5

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 400...440

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 14.75...14.85  
2nd speed rpm : 950  
Rack travel in m: 13.90...14.10  
3rd speed rpm : 900  
Rack travel in m: 14.00...14.20  
4th speed rpm : 875  
Rack travel in m: 14.15...14.35  
5th speed rpm : 800  
Rack travel in m: 14.65...14.85

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 400  
Pressure hPa : 450  
Rack travel mm : 12.80...13.00 \*

Measurement  
Speed 1/min : 400

1st pressure hPa : 1200  
Rack travel in m: 14.75...14.85

2nd pressure hPa : 300  
Rack travel in m: 11.75...12.05  
3rd pressure hPa : -  
Rack travel in m: 10.25...10.55

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm3/ : 212.0...216.0  
1000 s: (209.0...219.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 450  
Speed rpm : 400  
Del.quantity cm3/ : 164.5...167.5  
1000 s: (161.5...170.5)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 107.0...109.0  
1000 s: (104.0...112.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 990...1006

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

\* Value only applies to initial setting  
of LDA spring.  
Ultimate setting of the LDA spring is  
performed by way of the appropriate  
setting given in the delivery curve.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 11.04.94  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 648 931  
  
Injection pump  
Pump designation : PE8P120A320LS7847-2  
EP type number : 0 412 628 885  
Governor  
Governor design. : RQ300/950PA1032-7  
Governor no. : 0 421 801 705

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550  
  
Rack travel in mm : 14.75...14.85  
  
Del. quantity cm<sup>3</sup>/ : 23.8...24.0  
100 s: (23.5...24.3)  
  
Spread cm<sup>3</sup> : 0.6  
100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 5.4...6.0  
Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
100 s: (0.7...1.9)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.64...1.84  
2nd speed rpm : 415  
travel mm : 3.72...3.92  
3rd speed rpm : 550  
travel mm : 5.9...6.1  
4th speed rpm : 1005  
travel mm : 6.74...6.94

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 550  
Aneroid pressure h: 1200

Del.quantity : 238.0...240.0  
1000 : (235.0...243.0)  
Spread cm3 : 6.00  
1000 : (9.00)

#### RATED SPEED

##### 1st version

##### Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

##### Testing:

1st rack travel in: 13.0  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

##### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.5

##### Testing:

Speed rpm : 200  
Minimum rack trave: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 400...440

#### TORQUE CONTROL

##### Torque control curve - 1st version

1st speed rpm : 550  
Rack travel in m: 14.75...14.85  
2nd speed rpm : 950  
Rack travel in m: 13.9...14.1  
3rd speed rpm : 900  
Rack travel in m: 14.0...14.2  
4th speed rpm : 875  
Rack travel in m: 14.15...14.35  
5th speed rpm : 800  
Rack travel in m: 14.65...14.85

#### Aneroid/Altitude Compensator Test

##### 1st version

##### Setting

Speed rpm : 400  
Pressure hPa : 1200  
Rack travel mm : 14.75...14.85

##### Measurement

Speed 1/min : 400

1st pressure hPa : 450  
Rack travel in m: 12.8...13.0  
2nd pressure hPa : 300  
Rack travel in m: 11.75...12.05  
3rd pressure hPa : -  
Rack travel in m: 10.25...10.55

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm3/ : 212.0...216.0  
1000 s: (209.0...219.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 450  
Speed rpm : 400  
Del.quantity cm3/ : 164.5...167.5  
1000 s: (161.5...170.5)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 107.0...109.0  
1000 s: (104.0...112.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 13.0  
Speed rpm : 990...1006

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 50.0...70.0  
1000 s: (46.0...74.0)  
Rack travel in mm : 10.3...11.3

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.4...5.600  
Del.quantity cm3/ : 10.0...16.0  
1000 s: (7.0...19.0)  
Spread cm3 : 6.00  
1000 s: (10.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 11.04.94  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 648 931

Injection pump  
Pump designation : PE8P120A320LS7847-2  
EP type number : 0 412 628 885  
Governor  
Governor design. : RQ300/950PA1032-7  
Governor no. : 0 421 801 705

Cust. part no. : 0230741302

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

G08

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.75...14.85

Del.quantity cm3/ : 23.8...24.0

100 s: (23.5...24.3)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.4...6.0

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.8

100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.64...1.84

2nd speed rpm : 415

travel mm : 3.72...3.92

3rd speed rpm : 550

travel mm : 5.9...6.1

4th speed rpm : 1005

travel mm : 6.74...6.94

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200  
Del.quantity : 238.0...240.0  
1000 : (235.0...243.0)  
Spread cm3 : 6.00  
1000 : (9.00)

#### RATED SPEED

##### 1st version

##### Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

##### Testing:

1st rack travel in: 13.0  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

##### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.5

##### Testing:

Speed rpm : 200  
Minimum rack trave: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 400...440

#### TORQUE CONTROL

##### Torque control curve - 1st version

1st speed rpm : 550  
Rack travel in m: 14.75...14.85  
2nd speed rpm : 950  
Rack travel in m: 13.9...14.1  
3rd speed rpm : 900  
Rack travel in m: 14.0...14.2  
4th speed rpm : 875  
Rack travel in m: 14.15...14.35  
5th speed rpm : 800  
Rack travel in m: 14.65...14.85

#### Aneroid/Altitude Compensator Test

##### 1st version

##### Setting

Speed rpm : 400  
Pressure hPa : 1200  
Rack travel mm : 14.75...14.85

##### Measurement

Speed 1/min : 400

G09

1st pressure hPa : 450  
Rack travel in m: 12.8...13.0  
2nd pressure hPa : 300  
Rack travel in m: 11.75...12.05  
3rd pressure hPa : -  
Rack travel in m: 10.25...10.55

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm3/ : 212.0...216.0  
1000 s: (209.0...219.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 450  
Speed rpm : 400  
Del.quantity cm3/ : 164.5...167.5  
1000 s: (161.5...170.5)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 107.0...109.0  
1000 s: (104.0...112.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 13.0  
Speed rpm : 990...1006

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 50.0...70.0  
1000 s: (46.0...74.0)  
Rack travel in mm : 10.3...11.3

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.4...5.600  
Del.quantity cm3/ : 10.0...16.0  
1000 s: (7.0...19.0)  
Spread cm3 : 6.00  
1000 s: (10.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 648 931B

Injection pump  
Pump designation : PE8P120A320LS7847-3  
EP type number : 0 412 628 886  
Governor  
Governor design. : RQ300/950PA1032-7  
Governor no. : 0 421 801 715

Cust. part no. : 0230741302

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.75...14.85

Del.quantity cm3/ : 23.8...24.0

100 s: (23.5...24.3)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.40...6.00

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.8

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 550  
Aneroid pressure h: 1200

Del.quantity : 238.0...240.0

1000 : (235.0...243.0)

Spread cm3 : 6.00

1000 : (9.00)

## RATED SPEED



1st version  
Control lever  
position degrees: 93.0...101.0

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 13.0  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 69.0...77.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.5

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 400...440

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 14.75...14.85  
2nd speed rpm : 950  
Rack travel in m: 13.90...14.10  
3rd speed rpm : 900  
Rack travel in m: 14.00...14.20  
4th speed rpm : 875  
Rack travel in m: 14.15...14.35  
5th speed rpm : 800  
Rack travel in m: 14.65...14.85

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 400  
Pressure hPa : 450  
Rack travel mm : 12.80...13.00 \*

Measurement  
Speed 1/min : 400

1st pressure hPa : 1200  
Rack travel in m: 14.75...14.85

2nd pressure hPa : 300  
Rack travel in m: 11.75...12.05  
3rd pressure hPa : -  
Rack travel in m: 10.25...10.55

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm3/ : 212.0...216.0  
1000 s: (209.0...219.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 450  
Speed rpm : 400  
Del.quantity cm3/ : 164.5...167.5  
1000 s: (161.5...170.5)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 107.0...109.0  
1000 s: (104.0...112.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 990...1006

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 50.0...70.0  
1000 s: (46.0...74.0)  
Rack travel in mm : 9.90...10.90

\* Value only applies to initial setting  
of LDA spring.  
Ultimate setting of the LDA spring is  
performed by way of the appropriate  
setting given in the delivery curve.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 648 931C  
  
Injection pump  
Pump designation : PE8P120A320LS7847-2  
EP type number : 0 412 628 885  
Governor  
Governor design. : RQ300/950PA1032-7  
Governor no. : 0 421 801 715

Cust. part no. : 0230741302

Customer spec. information  
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.75...14.85

Del. quantity cm<sup>3</sup>/ : 23.8...24.0

100 s: (23.5...24.3)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300  
Rack travel in mm : 5.40...6.00  
Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
100 s: (0.7...1.9)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110

Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 550  
Aneroid pressure h: 1200  
Del. quantity : 238.0...240.0  
1000 : (235.0...243.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 93.0...101.0

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 13.0  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 69.0...77.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.5

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 400...440

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 14.75...14.85  
2nd speed rpm : 950  
Rack travel in m: 13.90...14.10  
3rd speed rpm : 900  
Rack travel in m: 14.00...14.20  
4th speed rpm : 875  
Rack travel in m: 14.15...14.35  
5th speed rpm : 800  
Rack travel in m: 14.65...14.85

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 400  
Pressure hPa : 450  
Rack travel mm : 12.80...13.00 \*

Measurement  
Speed 1/min : 400

1st pressure hPa : 1200  
Rack travel in m: 14.75...14.85

2nd pressure hPa : 300  
Rack travel in m: 11.75...12.05  
3rd pressure hPa : -  
Rack travel in m: 10.25...10.55

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm3/ : 212.0...216.0  
1000 s: (209.0...219.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 450  
Speed rpm : 400  
Del.quantity cm3/ : 164.5...167.5  
1000 s: (161.5...170.5)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 107.0...109.0  
1000 s: (104.0...112.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 990...1006

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 50.0...70.0  
1000 s: (46.0...74.0)  
Rack travel in mm : 9.90...10.90

\* Value only applies to initial setting  
of LDA spring.  
Ultimate setting of the LDA spring is  
performed by way of the appropriate  
setting given in the delivery curve.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : 02.94  
Test oil : ISO-4113

Combination no. : 0 402 648 938

Injection pump  
Pump designation : PE8P120A320LS7840-10  
EP type number : 0 412 628 856  
Governor  
Governor design. : RQ300/1050PA1030-15  
Governor no. : 0 421 801 736

Cust. part no. : 0230743602

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

G14

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.40...13.50

Del. quantity cm3/ : 21.1...21.3

100 s: (20.8...21.6)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300  
Rack travel in mm : 6.20...6.80  
Del. quantity cm3/ : 1.0...1.6  
100 s: (0.7...1.9)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110

Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Aneroid pressure h: 750  
Del. quantity : 211.0...213.0  
1000 : (208.0...216.0)  
Spread cm3 : 6.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 91.0...99.0

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 69.0...77.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

Testing:

Speed rpm : 200  
Minimum rack travel: 8.80  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.70...12.90  
2nd speed rpm : 900  
Rack travel in m: 12.95...13.05  
3rd speed rpm : 800  
Rack travel in m: 13.40...13.50  
4th speed rpm : 700  
Rack travel in m: 13.40...13.50

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 400  
Pressure hPa : 400  
Rack travel mm : 12.35...12.45

Measurement

Speed 1/min : 400

1st pressure hPa : 750  
Rack travel in m: 13.40...13.50  
2nd pressure hPa : 200  
Rack travel in m: 11.50...11.70  
3rd pressure hPa : -  
Rack travel in m: 11.00...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750  
Speed rpm : 1050  
Del.quantity cm3/ : 192.0...196.0  
1000 s: (189.0...199.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 400  
Speed rpm : 400  
Del.quantity cm3/ : 156.5...159.5  
1000 s: (153.5...162.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 136.0...138.0  
1000 s: (133.0...141.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : 02.94  
Test oil : ISO-4113

Combination no. : 0 402 648 940

Injection pump  
Pump designation : PE8P120A320LS7847-3  
EP type number : 0 412 628 886  
Governor  
Governor design. : RQ300/950PA1032-11  
Governor no. : 0 421 801 737

Cust. part no. : 0240740602

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

G16

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.35...14.45

Del. quantity cm3/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300  
Rack travel in mm : 5.40...6.00

Del. quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200

Del. quantity : 225.0...227.0

1000 : (222.0...230.0)

Spread cm3 : 6.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 93.0...101.0

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

#### Testing:

1st rack travel in: 13.00  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Control lever  
position degrees: 68.0...76.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.50

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.00  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 385...425

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 14.35...14.45  
2nd speed rpm : 950  
Rack travel in m: 13.90...14.10  
3rd speed rpm : 825  
Rack travel in m: 14.35...14.45

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 400  
Pressure hPa : 450  
Rack travel mm : 12.80...13.00

#### Measurement

Speed 1/min : 400

1st pressure hPa : 1200  
Rack travel in m: 14.35...14.45  
2nd pressure hPa : 300  
Rack travel in m: 11.75...12.05  
3rd pressure hPa : -  
Rack travel in m: 10.25...10.55

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

G17

Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm3/ : 212.0...216.0  
1000 s: (209.0...219.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 450  
Speed rpm : 400  
Del.quantity cm3/ : 164.5...167.5  
1000 s: (161.5...170.5)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 107.0...109.0  
1000 s: (104.0...112.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 990...1006

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 04.94  
Replaces : 02.94  
Test oil : ISO-4113

Combination no. : 0 402 648 940

Injection pump  
Pump designation : PE8P120A320LS7847-3  
EP type number : 0 412 628 886  
Governor  
Governor design. : RQ300/950PA1032-8  
Governor no. : 0 421 801 723

Cust. part no. : 0240740602

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kw : 280.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

G18

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550  
Rack travel in mm : 13.95...14.05  
Del. quantity cm<sup>3</sup>/ : 22.5...22.7  
100 s: (22.2...23.0)  
Spread cm<sup>3</sup> : 0.6  
100 s: (0.9)

2nd speed rpm : 300  
Rack travel in mm : 5.00...5.60  
Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
100 s: (0.7...1.9)  
Spread cm<sup>3</sup> : 0.6  
100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 550  
Aneroid pressure h: 1200  
Del. quantity : 225.0...227.0  
1000 : (222.0...230.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 93.0...101.0

Setting point:



Speed rpm : 600  
Rack travel in mm : 20.0

#### Testing:

1st rack travel in: 12.50  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Control lever  
position degrees: 66.0...76.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.00  
Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 385...425

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 13.95...14.05  
2nd speed rpm : 950  
Rack travel in m: 13.50...13.70  
3rd speed rpm : 825  
Rack travel in m: 13.95...14.05

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 400  
Pressure hPa : 450  
Rack travel mm : 12.30...12.50

#### Measurement

Speed 1/min : 400

1st pressure hPa : 1200  
Rack travel in m: 13.95...14.05  
2nd pressure hPa : 300  
Rack travel in m: 11.25...11.55  
3rd pressure hPa : -  
Rack travel in m: 9.85...10.15

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

G19

Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm3/ : 212.0...216.0  
1000 s: (209.0...219.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 450  
Speed rpm : 400  
Del.quantity cm3/ : 164.5...167.5  
1000 s: (161.5...170.5)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 107.0...109.0  
1000 s: (104.0...112.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.50  
Speed rpm : 990...1006

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 45.0...75.0  
1000 s: (41.0...79.0)  
Rack travel in mm : 9.80...10.80

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 648 940B

Injection pump  
Pump designation : PE8P120A320LS7847-3  
EP type number : 0 412 628 883  
Governor  
Governor design. : RQ300/950PA1032-8  
Governor no. : 0 421 801 723

Cust. part no. : 0240740602

Customer spec. information  
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x wall thickness  
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

G20

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.30 (0.75)  
Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550  
Rack travel in mm : 14.35...14.45  
Del.quantity cm3/ : 22.5...22.7  
100 s : (22.2...23.0)  
Spread cm3 : 0.6  
100 s : (0.9)

2nd speed rpm : 300  
Rack travel in mm : 5.40...6.00  
Del.quantity cm3/ : 1.0...1.6  
100 s : (0.7...1.9)  
Spread cm3 : 0.6  
100 s : (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 550  
Aneroid pressure h: 1200  
Del.quantity : 225.0...227.0  
1000 : (222.0...230.0)  
Spread cm3 : 6.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 93.0...101.0

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever  
position degrees: 68.0...76.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.50

Testing:

Speed rpm : 200  
Minimum rack travel: 7.00  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 385...425

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 14.35...14.45  
2nd speed rpm : 950  
Rack travel in m: 13.90...14.10  
3rd speed rpm : 825  
Rack travel in m: 14.35...14.45

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 400  
Pressure hPa : 450  
Rack travel mm : 12.80...13.00

Measurement

Speed 1/min : 400

1st pressure hPa : 1200  
Rack travel in m: 14.35...14.45  
2nd pressure hPa : 300  
Rack travel in m: 11.75...12.05  
3rd pressure hPa : -  
Rack travel in m: 10.25...10.55

FUEL DELIVERY CHARACTERISTICS

1st version

G21

Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm3/ : 212.0...216.0  
1000 s: (209.0...219.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 450  
Speed rpm : 400  
Del.quantity cm3/ : 164.5...167.5  
1000 s: (161.5...170.5)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 107.0...109.0  
1000 s: (104.0...112.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 50.0...70.0  
1000 s: (46.0...74.0)  
Rack travel in mm : 9.90...10.90

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 05.94  
 Replaces : 02.94  
 Test oil : ISO-4113

Combination no. : 0 402 648 941

Injection pump  
 Pump designation : PE8P120A320LS7847-3  
 EP type number : 0 412 628 886  
 Governor  
 Governor design. : RGV300...95GPA1033-1  
 3  
 Governor no. : 0 421 814 094

Cust. part no. : 0240742202

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0  
 Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550

---

Rack travel in mm : 14.35...14.45

---

Del.quantity cm3/ : 22.5...22.7

---

100 s: (22.2...23.0)

---

Spread cm3 : 0.6

---

100 s: (0.9)

---

2nd speed rpm : 300  
 Rack travel in mm : 5.40...6.00  
 Del.quantity cm3/ : 1.0...1.6  
 100 s: (0.7...1.9)  
 Spread cm3 : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.34...1.64  
 2nd speed rpm : 589  
 travel mm : 4.72...5.22  
 3rd speed rpm : 790  
 travel mm : 6.23...6.73  
 4th speed rpm : 1009  
 travel mm : 8.32...8.72  
 5th speed rpm : 1210  
 travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1050  
 Rack travel in mm : 10.70...13.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550  
Aneroid pressure h: 1200  
Del.quantity : 225.0...227.0  
1000 : (222.0...230.0)  
Spread cm3 : 6.00  
1000 : (9.00)

RATED SPEED

1st version  
Control lever  
position degrees: 117.0...125.0

Testing:

1st rack travel in: 13.00  
Speed rpm : 993...1003  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever  
position degrees: 82.0...90.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.50

Testing:

Speed rpm : 200  
Minimum rack travel: 9.50  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 14.35...14.45  
2nd speed rpm : 950  
Rack travel in m: 13.90...14.10  
3rd speed rpm : 825  
Rack travel in m: 14.35...14.45

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 400  
Pressure hPa : 450  
Rack travel mm : 12.80...13.00 \*

Measurement

G23

Speed 1/min : 400

1st pressure hPa : 1200  
Rack travel in m: 14.35...14.45  
2nd pressure hPa : 300  
Rack travel in m: 11.75...12.05  
3rd pressure hPa : -  
Rack travel in m: 10.25...10.55

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm3/ : 212.0...216.0  
1000 s: (209.0...219.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 450  
Speed rpm : 400  
Del.quantity cm3/ : 164.5...167.5  
1000 s: (161.5...170.5)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 107.0...109.0  
1000 s: (104.0...112.0)  
Spread cm3 : 3.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 993...1003

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

Remarks:

:

\* Value only applies to initial setting of LDA spring.  
Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : 02.94  
Test oil : ISO-4113

Combination no. : 0 402 648 942

Injection pump  
Pump designation : PE8P120A320LS7847-3  
EP type number : 0 412 628 886  
Governor  
Governor design. : RQ300/950PA1031-16  
Governor no. : 0 421 801 722

Cust. part no. : 0240742302

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550

---

Rack travel in mm : 14.35...14.45

---

Del.quantity cm<sup>3</sup>/ : 22.5...22.7

---

100 s: (22.2...23.0)

---

Spread cm<sup>3</sup> : 0.6

---

100 s: (0.9)

---

2nd speed rpm : 300  
Rack travel in mm : 5.40...6.00  
Del.quantity cm<sup>3</sup>/ : 1.0...1.6  
100 s: (0.7...1.9)  
Spread cm<sup>3</sup> : 0.6  
100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 550  
Aneroid pressure h: 1200  
Del.quantity : 225.0...227.0  
1000 : (222.0...230.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 93.0...101.0

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 13.00  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 68.0...76.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.50

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.00  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 385...425

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 13.90...14.10  
2nd speed rpm : 825  
Rack travel in m: 14.35...14.45  
3rd speed rpm : 550  
Rack travel in m: 14.35...14.45

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 400  
Pressure hPa : 450  
Rack travel mm : 12.80...13.00

Measurement  
Speed 1/min : 400

1st pressure hPa : 1200  
Rack travel in m: 13.35...14.45  
2nd pressure hPa : 300  
Rack travel in m: 11.75...12.05  
3rd pressure hPa : -

G25

Rack travel in m: 10.25...10.55

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm3/ : 212.0...216.0  
1000 s: (209.0...219.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 450  
Speed rpm : 400  
Del.quantity cm3/ : 164.5...167.5  
1000 s: (161.5...170.5)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 107.0...109.0  
1000 s: (104.0...112.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 990...1006

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 04.94  
Replaces : 02.94  
Test oil : ISO-4113

Combination no. : 0 402 648 945

Injection pump  
Pump designation : PE8P120A320LS7847-3  
EP type number : 0 412 628 886  
Governor  
Governor design. : RQ300/1050PA1030-10  
Governor no. : 0 421 801 718

Cust. part no. : 0230747802

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kw : 280.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
Inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

G26

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.30 (0.75)  
Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550  
Rack travel in mm : 13.95...14.05  
Del. quantity cm3/ : 22.5...22.7  
100 s: (22.2...23.0)  
Spread cm3 : 0.6  
100 s: (0.9)

2nd speed rpm : 300  
Rack travel in mm : 5.00...5.60  
Del. quantity cm3/ : 1.0...1.6  
100 s: (0.7...1.9)  
Spread cm3 : 0.6  
100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 550  
Aneroid pressure h: 1200  
Del. quantity : 225.0...227.0  
1000 : (222.0...230.0)  
Spread cm3 : 6.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 95.0...103.0

Setting point:



Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.50  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1300  
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever  
position degrees: 68.0...76.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.30

Testing:

Speed rpm : 200  
Minimum rack travel: 7.10  
Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 385...425

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 13.95...14.05  
2nd speed rpm : 1050  
Rack travel in m: 13.50...13.70  
3rd speed rpm : 950  
Rack travel in m: 13.70...13.90  
4th speed rpm : 800  
Rack travel in m: 13.95...14.05

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 400  
Pressure hPa : 450  
Rack travel mm : 12.30...12.50

Measurement

Speed 1/min : 400

1st pressure hPa : 1200  
Rack travel in m: 13.95...14.05  
2nd pressure hPa : 300  
Rack travel in m: 11.25...11.55  
3rd pressure hPa : -  
Rack travel in m: 9.55...9.85

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 210.0...214.0  
1000 s: (207.0...217.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 450  
Speed rpm : 400  
Del.quantity cm3/ : 164.5...167.5  
1000 s: (161.5...170.5)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 104.0...106.0  
1000 s: (101.0...109.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50  
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 50.0...80.0  
1000 s: (46.0...84.0)  
Rack travel in mm : 10.00...11.00

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : 02.94  
Test oil : ISO-4113

Combination no. : 0 402 648 945

Injection pump  
Pump designation : PE8P120A320LS7847-3  
EP type number : 0 412 628 886  
Governor  
Governor design. : RQ300/1050PA1030-16  
Governor no. : 0 421 801 738

Cust. part no. : 0230747802

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

G28

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.35...14.45

Del. quantity cm<sup>3</sup>/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300  
Rack travel in mm : 5.40...6.00

Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
100 s: (0.7...1.9)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110

Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 550  
Aneroid pressure h: 1200  
Del. quantity : 225.0...227.0  
1000 : (222.0...230.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 95.0...103.0

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1300  
Speed rpm : 0.00...1.40

LOW IDLE 1

Control Lever  
position degrees: 68.0...76.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.40

Testing:

Speed rpm : 200  
Minimum rack trave: 7.10  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 385...425

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 14.35...14.45  
2nd speed rpm : 1050  
Rack travel in m: 13.95...14.15  
3rd speed rpm : 950  
Rack travel in m: 14.10...14.30  
4th speed rpm : 800  
Rack travel in m: 14.35...14.45

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 400  
Pressure hPa : 450  
Rack travel mm : 12.80...13.00

Measurement

Speed 1/min : 400

1st pressure hPa : 1200  
Rack travel in m: 14.35...14.45  
2nd pressure hPa : 300  
Rack travel in m: 11.75...12.05  
3rd pressure hPa : -  
Rack travel in m: 10.15...10.45

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 210.0...214.0  
1000 s: (207.0...217.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 450  
Speed rpm : 400  
Del.quantity cm3/ : 164.5...167.5  
1000 s: (161.5...170.5)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 104.0...106.0  
1000 s: (101.0...109.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 648 945B

Injection pump  
Pump designation : PE8P120A320LS7847-3  
EP type number : 0 412 628 886  
Governor  
Governor design. : RQ300/1050PA1030-10  
Governor no. : 0 421 801 718

Cust. part no. : 0230747802

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

H02

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.35...14.45

Del.quantity cm3/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.40...6.00

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200

Del.quantity : 225.0...227.0

1000 : (222.0...230.0)

Spread cm3 : 6.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 95.0...103.0

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1300  
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever  
position degrees: 68.0...76.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.40

Testing:

Speed rpm : 200  
Minimum rack travel: 7.10  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 385...425

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 14.35...14.45  
2nd speed rpm : 1050  
Rack travel in m: 13.95...14.15  
3rd speed rpm : 950  
Rack travel in m: 14.10...14.30  
4th speed rpm : 800  
Rack travel in m: 14.35...14.45

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 400  
Pressure hPa : 450  
Rack travel mm : 12.80...13.00

Measurement

Speed 1/min : 400

1st pressure hPa : 1200  
Rack travel in m: 14.35...14.45  
2nd pressure hPa : 300  
Rack travel in m: 11.75...12.05  
3rd pressure hPa : -  
Rack travel in m: 10.15...10.45

FUEL DELIVERY CHARACTERISTICS

H03

1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 210.0...214.0  
1000 s: (207.0...217.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 450  
Speed rpm : 400  
Del.quantity cm3/ : 164.5...167.5  
1000 s: (161.5...170.5)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 104.0...106.0  
1000 s: (101.0...109.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 50.0...70.0  
1000 s: (46.0...74.0)  
Rack travel in mm : 9.80...10.80

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : 02.94  
Test oil : ISO-4113

Combination no. : 0 402 648 946

Injection pump  
Pump designation : PE8P120A320LS7847-3  
EP type number : 0 412 628 836  
Governor  
Governor design. : RQ300/1050PA1031-15  
Governor no. : 0 421 801 721

Cust. part no. : 0230747902

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

H04

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550  
Rack travel in mm : 14.35...14.45  
Del.quantity cm3/ : 22.5...22.7  
100 s: (22.2...23.0)

Spread cm3 : 0.6  
100 s: (0.9)

2nd speed rpm : 300  
Rack travel in mm : 5.40...6.00  
Del.quantity cm3/ : 1.0...1.6  
100 s: (0.7...1.9)  
Spread cm3 : 0.6  
100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 550  
Aneroid pressure h: 1200  
Del.quantity : 225.0...227.0  
1000 : (222.0...230.0)  
Spread cm3 : 6.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 95.0...103.0

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

#### Testing:

1st rack travel in: 13.00  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1300  
Speed rpm : 0.00...1.40

#### LOW IDLE 1

Control lever  
position degrees: 69.0...77.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.50

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.10  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 385...425

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 14.35...14.45  
2nd speed rpm : 1050  
Rack travel in m: 13.95...14.15  
3rd speed rpm : 950  
Rack travel in m: 14.10...14.30  
4th speed rpm : 800  
Rack travel in m: 14.30...14.50

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 400  
Pressure hPa : 450  
Rack travel mm : 12.80...13.00

#### Measurement

Speed 1/min : 400

1st pressure hPa : 1200  
Rack travel in m: 14.35...14.45  
2nd pressure hPa : 300  
Rack travel in m: 11.75...12.05  
3rd pressure hPa : -  
Rack travel in m: 10.15...10.45

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 210.0...214.0  
1000 s: (207.0...217.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 450  
Speed rpm : 400  
Del.quantity cm3/ : 164.5...167.5  
1000 s: (161.5...170.5)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 104.0...106.0  
1000 s: (101.0...109.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 1090...1106

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 275.0...295.0  
1000 s: (271.0...299.0)  
Rack travel in mm : 10.00...11.00

Remarks:

:

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 648 947  
  
Injection pump  
Pump designation : PE8P120A320LS7859  
EP type number : 0 412 628 869  
Governor  
Governor design. : RQ300/950PA1032-12  
Governor no. : 0 421 801 741

Cust. part no. : 0230749602

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 13.70...13.80

Del.quantity cm3/ : 24.4...24.6

100 s: (24.1...24.9)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.90...5.50

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1000

Del.quantity : 244.0...246.0

1000 : (241.0...249.0)

Spread cm3 : 6.00

1000 : (9.00)

## RATED SPEED



1st version  
Control lever  
position degrees: 94.0...102.0

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 12.75  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1200  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 70.0...78.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.20

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 360...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 400  
Pressure hPa : 550  
Rack travel mm : 13.05...13.15

Measurement  
Speed 1/min : 400

1st pressure hPa : 1000  
Rack travel in m: 13.70...13.80  
2nd pressure hPa : 250  
Rack travel in m: 10.90...11.10  
3rd pressure hPa : -  
Rack travel in m: 9.45...9.75

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 950  
Del.quantity cm3/ : 233.0...237.0  
1000 s: (230.0...240.0)

Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 207.0...210.0  
1000 s: (204.0...213.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.75  
Speed rpm : 990...1006

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 255.0...285.0  
1000 s: (251.0...289.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 05.94  
 Replaces : 10.93  
 Test oil : ISO-4113

Combination no. : 0 402 648 947

Injection pump  
 Pump designation : PE8P120A320LS7859  
 EP type number : 0 412 628 869  
 Governor  
 Governor design. : RQ300/950FA1032-5  
 Governor no. : 0 421 801 668

Cust. part no. : 0230749602

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0  
 Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness : 8.00X2.50X1000  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550

---

Rack travel in mm : 13.70...13.80

---

Del.quantity cm3/ : 24.4...24.6  
 100 s: (24.1...24.9)

---

Spread cm3 : 0.6  
 100 s: (0.9)

---

2nd speed rpm : 300  
 Rack travel in mm : 4.90...5.50  
 Del.quantity cm3/ : 1.6...2.2  
 100 s: (1.3...2.5)

---

Spread cm3 : 0.6  
 100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: 108...110  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 550  
 Aneroid pressure h: 1000  
 Del.quantity : 244.0...246.0  
 1000 : (241.0...249.0)  
 Spread cm3 : 6.00  
 1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 94.0...102.0

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 12.75  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1200  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 70.0...78.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.20

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 360...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 400  
Pressure hPa : 550  
Rack travel mm : 13.05...13.15

Measurement  
Speed 1/min : 400

1st pressure hPa : 1000  
Rack travel in m: 13.70...13.80  
2nd pressure hPa : 250  
Rack travel in m: 10.90...11.10  
3rd pressure hPa : -  
Rack travel in m: 9.45...9.75

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 950  
Del.quantity cm3/ : 233.0...237.0  
1000 s: (230.0...240.0)

Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 207.0...210.0  
1000 s: (204.0...213.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.75  
Speed rpm : 990...1006

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 65.0...95.0  
1000 s: (61.0...99.0)  
Rack travel in mm : 9.40...9.80

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : 10.93  
Test oil : ISO-4113

Combination no. : 0 402 648 948

Injection pump  
Pump designation : PE8P120A320LS7859  
EP type number : 0 412 628 869  
Governor  
Governor design. : RQ300/1050PA1030-17  
Governor no. : 0 421 801 742

Cust. part no. : 0230749802

Customer spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 13.70...13.80

Del.quantity cm3/ : 24.4...24.6

100 s: (24.1...24.9)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.90...5.50

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1000

Del.quantity : 244.0...246.0

1000 : (241.0...249.0)

Spread cm3 : 6.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 94.0...102.0

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 12.60  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 69.0...77.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 360...400

TORQUE CONTROL  
Dimension a mm : 0.35  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 13.70...13.80  
2nd speed rpm : 1050  
Rack travel in m: 13.50...13.70

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 400  
Pressure hPa : 550  
Rack travel mm : 13.05...13.15

Measurement  
Speed 1/min : 400

1st pressure hPa : 1000  
Rack travel in m: 13.60...13.70  
2nd pressure hPa : 250  
Rack travel in m: 10.90...11.10  
3rd pressure hPa : -  
Rack travel in m: 9.45...9.75

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 1050  
Del.quantity cm3/ : 228.0...232.0  
1000 s: (225.0...235.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 207.0...210.0  
1000 s: (204.0...213.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.60  
Speed rpm : 1090...1106

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 255.0...285.0  
1000 s: (251.0...289.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : 10.93  
Test oil : ISO-4113

Combination no. : 0 402 648 948

Injection pump  
Pump designation : PE8P120A320LS7859  
EP type number : 0 412 628 869  
Governor  
Governor design. : RQ300/1050PA1030-7  
Governor no. : 0 421 801 669

Cust. part no. : 0230749802

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness : 8.00X2.50X1000  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 13.70...13.80

Del. quantity cm3/ : 24.4...24.6

100 s: (24.1...24.9)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.90...5.50

Del. quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1000

Del. quantity : 244.0...246.0

1000 : (241.0...249.0)

Spread cm3 : 6.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 94.0...102.0

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 12.60  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 69.0...77.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 360...400

TORQUE CONTROL  
Dimension a mm : 0.35  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 13.70...13.80  
2nd speed rpm : 1050  
Rack travel in m: 13.50...13.70

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 400  
Pressure hPa : 550  
Rack travel mm : 13.05...13.15

Measurement  
Speed 1/min : 400

1st pressure hPa : 1000  
Rack travel in m: 13.60...13.70  
2nd pressure hPa : 250  
Rack travel in m: 10.90...11.10  
3rd pressure hPa : -  
Rack travel in m: 9.45...9.75

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 1050  
Del.quantity cm3/ : 228.0...232.0  
1000 s: (225.0...235.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 207.0...210.0  
1000 s: (204.0...213.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.60  
Speed rpm : 1090...1106

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 65.0...95.0  
1000 s: (61.0...99.0)  
Rack travel in mm : 9.40...9.80

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 05.94  
 Replaces : 11.93  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 949  
 Injection pump  
 Pump designation : PE8P120A320LS7863  
 EP type number : 0 412 628 874  
 Governor  
 Governor design. : RQV300...950PA1050  
 -2K  
 Governor no. : 0 421 815 381  
 Cust. part no. : 0240740002

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0  
 Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 95...115

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 14.00...15.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 Firing order : 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 14.75...14.85

Del.quantity cm<sup>3</sup>/ : 28.1...28.3

100 s: (27.8...28.6)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300  
 Rack travel in mm : 5.40...6.00  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.38...1.88  
 2nd speed rpm : 350  
 travel mm : 2.31...2.81  
 3rd speed rpm : 510  
 travel mm : 3.27...3.77  
 4th speed rpm : 790  
 travel mm : 4.75...5.25  
 5th speed rpm : 1006  
 travel mm : 7.25...7.75

## GUIDE SLEEVE POSITION

Control-lever position



Degree: -1  
Speed rpm : 1160  
Rack travel in mm : 12.50...15.10

#### FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 950  
Aneroid pressure h: 1200  
Del. quantity : 281.0...283.0  
1000 : (278.0...286.0)  
Spread cm3 : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 110...118

Testing:  
1st rack travel in: 13.80  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1250  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Control lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.20

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.30  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30

#### CONSTANT REGULATION

Speed rpm : 300...500

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 14.75...14.85  
2nd speed rpm : 750  
Rack travel in m: 14.40...14.60  
3rd speed rpm : 700  
Rack travel in m: 14.10...14.30  
4th speed rpm : 650  
Rack travel in m: 13.90...14.10  
5th speed rpm : 550  
Rack travel in m: 13.85...14.05

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 850  
Pressure hPa : 500  
Rack travel mm : 12.10...12.30

#### Measurement

Speed 1/min : 850

1st pressure hPa : 1200  
Rack travel in m: 14.95...15.05  
2nd pressure hPa : 150  
Rack travel in m: 8.60...9.00  
3rd pressure hPa : -  
Rack travel in m: 7.80...8.10

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 750  
Del. quantity cm3/ : 275.0...279.0  
1000 s: (272.0...282.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 550  
Del. quantity cm3/ : 265.0...271.0  
1000 s: (262.0...274.0)  
Spread cm3 : 8.0  
1000 s: (12.0)  
Aneroid pressure h: 500  
Speed rpm : 400  
Del. quantity cm3/ : 194.5...197.5  
1000 s: (191.5...200.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.80  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...140.0  
1000 s: (116.0...144.0)  
Rack travel in mm : 11.40...12.20

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 05.94  
 Replaces : 10.93  
 Test oil : ISO-4113

Combination no. : 0 402 648 953

Injection pump  
 Pump designation : PE8P120A320LS7859  
 EP type number : 0 412 628 869  
 Governor  
 Governor design. : RQV300...950PA1033  
 -10  
 Governor no. : 0 421 814 040

Cust. part no. : 0230749702

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0  
 Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 Firing order : 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550

---

Rack travel in mm : 13.70...13.80

---

Del. quantity cm<sup>3</sup>/ : 24.4...24.6  
 100 s: (24.1...24.9)

---

Spread cm<sup>3</sup> : 0.6  
 100 s: (0.9)

---

2nd speed rpm : 300  
 Rack travel in mm : 4.90...5.50  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.09...1.49  
 2nd speed rpm : 567  
 travel mm : 4.41...4.91  
 3rd speed rpm : 617  
 travel mm : 4.98...5.48  
 4th speed rpm : 780  
 travel mm : 6.06...6.56  
 5th speed rpm : 1009  
 travel mm : 8.40...8.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1  
Speed rpm : 1050  
Rack travel in mm : 11.30...13.90

#### FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 550  
Aneroid pressure h: 1000  
Del. quantity : 244.0...246.0  
1000 : (241.0...249.0)  
Spread cm3 : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 12.75  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1200  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 82...90

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 380...420

CONSTANT REGULATION  
Speed rpm : 300...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 400  
Pressure hPa : 550  
Rack travel mm : 13.05...13.15

Measurement  
Speed 1/min : 400

1st pressure hPa : 1000  
Rack travel in m: 13.70...13.80  
2nd pressure hPa : 250  
Rack travel in m: 10.90...11.10

3rd pressure hPa : -  
Rack travel in m: 9.45...9.75

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 950  
Del. quantity cm3/ : 233.0...237.0  
1000 s: (230.0...240.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del. quantity cm3/ : 207.0...210.0  
1000 s: (204.0...213.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.75  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 04.94  
 Replaces : 02.94  
 Test oil : ISO-4113

Combination no. : 0 402 648 957

Injection pump  
 Pump designation : PE8P120A320LS7863  
 EP type number : 0 412 628 874  
 Governor  
 Governor design. : RGV300...950PA1056-2  
 K  
 Governor no. : 0 421 815 382

Cust. part no. : 0240743202

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0  
 Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 95...115

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 14.00...15.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 Firing order : 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 950

---

Rack travel in mm : 14.75...14.85

---

Del.quantity cm3/ : 28.1...28.3

---

100 s: (27.8...28.6)

---

Spread cm3 : 0.6

---

100 s: (0.9)

---

2nd speed rpm : 300  
 Rack travel in mm : 5.40...6.00  
 Del.quantity cm3/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm3 : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.48...1.78  
 2nd speed rpm : 350  
 travel mm : 2.31...2.81  
 3rd speed rpm : 400  
 travel mm : 2.85...3.35  
 4th speed rpm : 790  
 travel mm : 4.75...5.25  
 5th speed rpm : 1006  
 travel mm : 7.30...7.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1  
Speed rpm : 1160  
Rack travel in mm : 12.50...15.10

#### FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 950  
Aneroid pressure h: 1200  
Del.quantity : 281.0...283.0  
1000 : (278.0...286.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 107.0...115.0

Testing:  
1st rack travel in: 13.80  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1090...1120  
4th rack travel in: 1250  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 70.0...78.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.20

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.30  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION  
Speed rpm : 300...500

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 14.75...14.85  
2nd speed rpm : 850  
Rack travel in m: 14.90...15.10  
3rd speed rpm : 750  
Rack travel in m: 14.45...14.55  
4th speed rpm : 650  
Rack travel in m: 13.90...14.10  
5th speed rpm : 550  
Rack travel in m: 13.85...14.05

Aneroid/Altitude  
Compensator Test

H2O

1st version  
Setting  
Speed rpm : 850  
Pressure hPa : 500  
Rack travel mm : 12.00...12.20

Measurement  
Speed 1/min : 850

1st pressure hPa : 1200  
Rack travel in m: 14.90...15.10  
2nd pressure hPa : 150  
Rack travel in m: 8.60...9.00  
3rd pressure hPa : -  
Rack travel in m: 7.80...8.10

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 275.0...279.0  
1000 s: (272.0...282.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 550  
Del.quantity cm<sup>3</sup>/ : 265.0...271.0  
1000 s: (262.0...274.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 500  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 192.5...195.5  
1000 s: (189.5...198.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.80  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...140.0  
1000 s: (116.0...144.0)  
Rack travel in mm : 11.40...12.20

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 04.94  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 648 970

Injection pump  
Pump designation : PE8P120A320LS7863  
EP type number : 0 412 628 874  
Governor  
Governor design. : RQV300...950PA1108K  
Governor no. : 0 421 815 369

Cust. part no. : 0240748402

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

H22

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
: (4.95...5.15)  
Rack travel in mm : 14.00...15.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 14.75...14.85

Del. quantity cm<sup>3</sup>/ : 28.1...28.3

100 s: (27.8...28.6)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300  
Rack travel in mm : 5.40...6.00

Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6  
100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.37...1.67

2nd speed rpm : 318  
travel mm : 1.55...2.05

3rd speed rpm : 368  
travel mm : 2.25...2.75

4th speed rpm : 730  
travel mm : 5.94...6.46

5th speed rpm : 1008  
travel mm : 9.63...10.03

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1170

Rack travel in mm : 12.50...15.10

FULL LOAD DELIV. AT FULL LOAD STOP



1st version  
Speed rpm : 950  
Aneroid pressure h: 1200  
Del.quantity : 281.0...283.0  
1000 : (278.0...286.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117.0...125.0

Testing:  
1st rack travel in: 13.80  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1250  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 70.0...78.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.20

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.30  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION  
Speed rpm : 300...500

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 14.75...14.85  
2nd speed rpm : 850  
Rack travel in m: 14.90...15.10  
3rd speed rpm : 750  
Rack travel in m: 14.40...14.60  
4th speed rpm : 650  
Rack travel in m: 13.90...14.10  
5th speed rpm : 550  
Rack travel in m: 13.85...14.05

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 850  
Pressure hPa : 500

Rack travel mm : 12.00...12.20

Measurement  
Speed 1/min : 850

1st pressure hPa : 1200  
Rack travel in m: 14.90...15.10  
2nd pressure hPa : 150  
Rack travel in m: 8.60...9.00  
3rd pressure hPa : -  
Rack travel in m: 7.80...8.10

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 275.0...279.0  
1000 s: (272.0...282.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 550  
Del.quantity cm<sup>3</sup>/ : 265.0...271.0  
1000 s: (262.0...274.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 500  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 192.5...195.5  
1000 s: (189.5...198.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.80  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 120.0...140.0  
1000 s: (116.0...144.0)  
Rack travel in mm : 11.40...12.20

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 04.94  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 975  
 Injection pump  
 Pump designation : PE8P120A320LS7840-1  
 EP type number : 0 412 628 862  
 Governor  
 Governor design. : RGV350...950PA1123  
 Governor no. : 0 421 814 085  
 Cust. part no. : 0230747102  
 Customer-spec. information  
 Customer : MERCEDES-BENZ  
 Engine : OM442 A  
 1st version kW : 250.0  
 Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve  
 : 1 417 413 025  
 Inlet press., bar : 1.50  
 Overflow  
 quantity min. 1/h: 80...100  
 Test nozzle holder  
 assembly : 1 688 901 105  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 075  
 Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 950  
 Rack travel in mm : 13.25...13.35  
 Del.quantity cm3/ : 21.0...21.2  
 100 s: (20.7...21.5)  
 Spread cm3 : 0.6  
 100 s: (0.9)  
 2nd speed rpm : 350  
 Rack travel in mm : 5.40...6.00  
 Del.quantity cm3/ : 1.0...1.6  
 100 s: (0.7...1.9)  
 Spread cm3 : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.63...1.93  
 2nd speed rpm : 370  
 travel mm : 1.75...2.25  
 3rd speed rpm : 420  
 travel mm : 2.29...2.79  
 4th speed rpm : 995  
 travel mm : 9.21...9.61  
 5th speed rpm : 1200  
 travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1  
Speed rpm : 1090  
Rack travel in mm : 11.00...13.60

#### FULL LOAD DELIV. AT FULL LOAD STOP

##### 1st version

Speed rpm : 950  
Aneroid pressure h: 1200  
Del.quantity : 210.0...212.0  
1000 : (207.0...215.0)  
Spread cm3 : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 98.0...106.0

##### Testing:

1st rack travel in: 12.30  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1055...1085  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 65.0...73.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.7

##### Testing:

Speed rpm : 250  
Minimum rack trave: 9.10  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80

#### CONSTANT REGULATION

Speed rpm : 370...490

#### Aneroid/Altitude Compensator Test

##### 1st version

##### Measurement

Speed 1/min : 500

1st pressure hPa : 700  
Rack travel in m: 12.80...13.00  
2nd pressure hPa : 350  
Rack travel in m: 11.45...11.55  
3rd pressure hPa : -  
Rack travel in m: 11.95...11.25

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1200  
Speed rpm : 700  
Del.quantity cm3/ : 208.0...212.0  
1000 s: (205.0...215.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 136.0...138.0  
1000 s: (133.0...141.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 12.30  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 195.0...225.0  
1000 s: (191.0...229.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 04.94  
Replaces : 10.92  
Test oil : ISO-4113

Combination no. : 0 402 678 820

Injection pump  
Pump designation : PE8P120A320LS7823-1  
EP type number : 0 412 628 872  
Governor  
Governor design. : RSV350...1050POA535  
-9

Governer no. : 0 421 833 393

Cust. part no. : 0240742402

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442LA

1st version kW : 362.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.70...13.80

Del.quantity cm3/ : 23.4...23.7

100 s: (23.1...24.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350  
Rack travel in mm : 4.80...5.40  
Del.quantity cm3/ : 1.5...2.1  
100 s: (1.2...2.4)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3

Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 900  
Del.quantity : 234.0...237.0  
1000 : (231.0...240.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 90.0...98.0

Testing:  
1st rack travel in: 13.40  
Speed rpm : 1070...1079  
2nd rack travel in: 4.00  
Speed rpm : 1135...1152  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 64.0...72.0  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.1

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 350  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 360...420

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1030  
Rack travel in m: 14.40...14.60  
2nd speed rpm : 950  
Rack travel in m: 14.90...15.10  
3rd speed rpm : 700  
Rack travel in m: 15.40...15.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.70...13.80

Measurement  
Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 11.30...11.40  
2nd pressure hPa : 1050  
Rack travel in m: 13.90...14.00  
3rd pressure hPa : 500  
Rack travel in m: 12.85...13.05  
4th pressure hPa : 1250  
Rack travel in m: 14.75...14.95

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1600  
Speed rpm : 1030  
Del.quantity cm<sup>3</sup>/ : 253.0...256.0  
1000 s: (250.0...259.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 271.0...274.0  
1000 s: (268.0...277.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 141.0...143.0  
1000 s: (138.0...146.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (-)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.40  
Speed rpm : 1070...1079

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : 02.94  
Test oil : ISO-4113

Combination no. : 0 402 678 823

Injection pump  
Pump designation : PE8P120A320LS7801-2  
EP type number : 0 412 628 825  
Governor  
Governor design. : RSV550...850POA574  
Governor no. : 0 421 833 430

Customer spec. information  
Customer : MB

Engine : OM442LA

1st version kW : 302.0  
Rated speed : 1700

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (4.65...5.85)

Rack travel in mm : 20.00...21.00

JO1

Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 830

Rack travel in mm : 15.30...15.40

Del. quantity cm3/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 550

Rack travel in mm : 4.30...4.90

Del. quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 830

Aneroid pressure h: 1000

Del. quantity : 230.0...232.0

1000 : (227.0...235.0)

Spread cm3 : 6.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 82.0...90.0

Testing:

1st rack travel in: 14.35

Speed rpm : 890...895

2nd rack travel in: 4.00

Speed rpm : 955...968

4th rack travel in: 1050

Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever

position degrees: 70.0...78.0

Setting point w/out bumper spring

Speed rpm : 550

Rack travel in mm : 4.60

#### Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 550

Rack travel in mm : 4.50...4.70

Rack travel in mm : 2.00

Speed rpm : 550...610

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude

Compensator Test

#### 1st version

Setting

Speed rpm : 500

Pressure hPa : 1000

Rack travel mm : 15.30...15.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : 450

Rack travel in m: 14.45...14.55

2nd pressure hPa : 250

Rack travel in m: 12.50...12.70

3rd pressure hPa : -

Rack travel in m: 11.35...11.65

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000

Speed rpm : 830

Del.quantity cm3/ : 230.0...232.0

1000 s: (227.0...235.0)

Spread cm3 : 6.00

1000 s: (9.0)

Aneroid pressure h: 1000

Speed rpm : 600

Del.quantity cm3/ : 232.0...238.0

1000 s: (229.0...241.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 145.0...147.0

1000 s: (142.0...150.0)

Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.35

Speed rpm : 890...895

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 220.0...240.0

1000 s: (216.0...244.0)

#### LOW IDLE

Speed rpm : 550

Rack travel in mm : 4.30...4.90

Del.quantity cm3/ : 14.0...20.0

1000 s: (11.0...23.0)

Spread cm3 : 6.00

1000 s: (10.0)

Remarks:

In order to adjust and test the EP combination, set full-load speed regul. at 1110...1120 1/min. Then set speed regul. to 1060...1070 1/min again.

#### APPLICATION

Forage harvester



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 04.94  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 678 825

Injection pump  
Pump designation : PE8P120A320LS7823-2  
EP type number : 0 412 628 883  
Governor  
Governor design. : RSV450...1050POA541-1  
Governor no. : 0 421 833 444

Cust. part no. : 0250744202

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442LA

1st version kW : 362.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1030

---

Rack travel in mm : 14.85...14.95

---

Del. quantity cm<sup>3</sup>/ : 25.4...25.6  
100 s : (25.1...25.9)

---

Spread cm<sup>3</sup> : 0.5  
100 s : (0.9)

---

2nd speed rpm : 450  
Rack travel in mm : 4.30...4.90  
Del. quantity cm<sup>3</sup>/ : 1.5...2.1  
100 s : (1.2...2.4)  
Spread cm<sup>3</sup> : 0.8  
100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1030  
Aneroid pressure h: 1600  
Del. quantity : 254.0...256.0  
1000 : (251.0...259.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 86.0...94.0

Testing:

1st rack travel in: 13.90  
Speed rpm : 1070...1075  
2nd rack travel in: 4.00  
Speed rpm : 1115...1128  
4th rack travel in: 14.00  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 65.0...73.0  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 4.6

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 450  
Rack travel in mm : 4.50...4.70  
Rack travel in mm : 2.00  
Speed rpm : 445...505

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1030  
Rack travel in m: 14.85...14.95  
2nd speed rpm : 950  
Rack travel in m: 14.95...15.05  
3rd speed rpm : 750  
Rack travel in m: 15.40...15.60

Aneroid/Altitude  
Compensator Test

1st version

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.45...10.75  
2nd pressure hPa : 400  
Rack travel in m: 11.30...11.40  
3rd pressure hPa : 700  
Rack travel in m: 14.05...14.25  
4th pressure hPa : 1600  
Rack travel in m: 15.30...15.50

FUEL DELIVERY CHARACTERISTICS

1st version

J04

Aneroid pressure h: 1600  
Speed rpm : 750  
Del.quantity cm3/ : 254.0...256.0  
1000 s: (251.0...259.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 150.0...152.0  
1000 s: (147.0...155.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.90  
Speed rpm : 1070...1075

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : 09.92  
Test oil : ISO-4113

Combination no. : 0 402 746 913

Injection pump  
Pump designation : PES6P120A720LS7237-1  
1

EP type number : 0 412 726 911  
Governor  
Governor design. : RQ300/1100PA1008-2  
Governor no. : 0 421 801 713

Cust. part no. : 0200747802

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100  
Rack travel in mm : 13.65...13.75

Del.quantity cm3/ : 19.8...20.0

100 s: (19.5...20.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300  
Rack travel in mm : 5.60...6.20  
Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110

Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 1400  
Del.quantity : 198.0...200.0  
1000 : (195.0...203.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 95.0...103.0

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.70  
Speed rpm : 1145...1161  
2nd rack travel in: 4.00  
Speed rpm : 1245...1275  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever  
position degrees: 72.0...80.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

Testing:

Speed rpm : 200  
Minimum rack travel: 9.00  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 340...380

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.95...12.25

Measurement

Speed 1/min : 500

1st pressure hPa : 600  
Rack travel in m: 12.60...12.70  
2nd pressure hPa : 800  
Rack travel in m: 12.90...13.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400  
Speed rpm : 1100  
Del.quantity cm3/ : 198.0...200.0  
1000 s: (195.0...203.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1400  
Speed rpm : 800  
Del.quantity cm3/ : 201.0...205.0  
1000 s: (198.0...208.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm3/ : 144.0...146.0  
1000 s: (141.0...149.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70  
Speed rpm : 1145...1161

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 70.0...90.0  
1000 s: (66.0...94.0)  
Rack travel in mm : 11.90...12.30

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 04.94  
Replaces : 10.92  
Test oil : ISO-4113

Combination no. : 0 402 746 913X

Injection pump  
Pump designation : PES6P120A720LS7237  
-10

EP type number : 0 412 726 872  
Governor  
Governor design. : RQ300/1100PA1008-1  
Governor no. : 0 421 801 592

Cust. part no. : 0200747802

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100  
Rack travel in mm : 13.65...13.75  
Del. quantity cm<sup>3</sup>/ : 19.8...20.0  
100 s : (19.5...20.3)  
Spread cm<sup>3</sup> : 0.5  
100 s : (0.9)

2nd speed rpm : 300  
Rack travel in mm : 6.20...6.80  
Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s : (1.3...2.5)  
Spread cm<sup>3</sup> : 0.8  
100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 1400  
Del. quantity : 198.0...200.0  
1000 : (195.0...203.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 95.0...103.0

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.70  
Speed rpm : 1145...1161  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever  
position degrees: 72.0...80.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

Testing:

Speed rpm : 200  
Minimum rack travel: 8.30  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 370...410

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 12.00...12.30

Measurement

Speed 1/min : 500

1st pressure hPa : 600  
Rack travel in m: 12.65...12.75  
2nd pressure hPa : 800  
Rack travel in m: 12.95...13.15

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400  
Speed rpm : 800  
Del.quantity cm3/ : 201.0...205.0  
1000 s: (198.0...208.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 144.0...146.0  
1000 s: (141.0...149.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.70  
Speed rpm : 1145...1161

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 60.0...80.0  
1000 s: (56.0...84.0)  
Rack travel in mm : 11.80...12.20

Remarks:

:

## Note remarks

## TEST BENCH REQUIREMENTS

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x1000

BEGINNING OF DELIVERY

Time to cyl. no. : 6

## BASIC SETTING

```
2nd speed      rpm : 300
Rack travel in mm : 6.20...6.80
Del.quantity   cm3/ : 1.6...2.2
               100 s : (1.3...2.5)
Spread         cm3 : 0.8
               100 s : (1.2)
```

### GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110  
Speed rpm : 650  
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

```
1st version
Speed      rpm      : 600
Aneroid pressure h: 600
Del.quantity      : 205.0...207.0
                1000 : (202.0...210.0)
Spread      cm3     : 5.00
                1000 : (9.00)
```

**RATED SPEED**

1st version  
Control lever  
position degrees: 94.0...102.0

Setting point:

Speed rpm : 650  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.30  
Speed rpm : 1145...1161  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 13.00  
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever  
position degrees: 69.0...77.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

Testing:

Speed rpm : 200  
Minimum rack travel: 8.40  
Speed rpm : 300  
Rack travel in mm : 6.20...6.80  
Rack travel in mm : 2.00  
Speed rpm : 370...410

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 600  
Pressure hPa : 600  
Rack travel mm : 13.75...13.85

Measurement

Speed 1/min : 600

1st pressure hPa : 150  
Rack travel in m: 11.65...11.75  
2nd pressure hPa : 350  
Rack travel in m: 13.10...13.30  
3rd pressure hPa : 800  
Rack travel in m: 13.55...13.65  
4th pressure hPa : 950  
Rack travel in m: 14.30...14.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400  
Speed rpm : 1100

Del.quantity cm3/ : 221.0...224.0  
1000 s: (218.0...227.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 140.0...142.0  
1000 s: (137.0...145.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30  
Speed rpm : 1145...1161

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 04.94  
Replaces : 04.92  
Test oil : ISO-4113

Combination no. : 0 402 746 916

Injection pump  
Pump designation : PES6P120A720LS7237  
-11  
EP type number : 0 412 726 911  
Governor  
Governor design. : RQ300/1100PA1010-2  
Governor no. : 0 421 801 714

Cust. part no. : 0200747902

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

---

Rack travel in mm : 13.65...13.75

---

Del. quantity cm3/ : 19.8...20.0

---

100 s : (19.5...20.3)

---

Spread cm3 : 0.5

---

100 s : (0.9)

---

2nd speed rpm : 300  
Rack travel in mm : 6.20...6.80  
Del. quantity cm3/ : 1.6...2.2  
100 s : (1.3...2.5)  
Spread cm3 : 0.8  
100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 1200  
Del. quantity : 198.0...200.0  
1000 : (195.0...203.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 95.0...103.0

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.70  
Speed rpm : 1145...1161  
2nd rack travel in: 4.00  
Speed rpm : 1225...1255  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever  
position degrees: 72.0...80.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

Testing:

Speed rpm : 200  
Minimum rack travel: 9.00  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 355...395

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : 600  
Rack travel mm : 12.65...12.75

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 12.00...12.30  
2nd pressure hPa : 800  
Rack travel in m: 12.95...13.15

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400  
Speed rpm : 800  
Del. quantity cm3/ : 201.0...205.0  
1000 s: (198.0...208.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del. quantity cm3/ : 144.0...146.0  
1000 s: (141.0...149.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.70  
Speed rpm : 1145...1161

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 04.94  
Replaces : 10.92  
Test oil : ISO-4113

Combination no. : 0 402 746 916X

Injection pump  
Pump designation : PES6P120A720LS7237-1  
EP type number : 0 412 726 872  
Governor  
Governor design. : RQ300/1100PA1010  
Governor no. : 0 421 801 596

Cust. part no. : 0200747902

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100  
Rack travel in mm : 13.65...13.75

Del. quantity cm3/ : 19.8...20.0  
100 s: (19.5...20.3)

Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 300  
Rack travel in mm : 6.20...6.80  
Del. quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 1400  
Del. quantity : 198.0...200.0  
1000 : (195.0...203.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 95.0...103.0

Setting point:  
Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.70

Speed rpm : 1145...1161

2nd rack travel in: 4.00

Speed rpm : 1220...1250

4th rack travel in: 1300

Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever

position degrees: 72.0...80.0

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.5

Testing:

Speed rpm : 200

Minimum rack travel: 8.30

Speed rpm : 300

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 370...410

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : -

Rack travel mm : 12.00...12.30

Measurement

Speed 1/min : 500

1st pressure hPa : 600

Rack travel in m: 12.65...12.75

2nd pressure hPa : 800

Rack travel in m: 12.95...13.15

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400

Speed rpm : 800

Del.quantity cm<sup>3</sup>/ : 201.0...205.0

1000 s: (198.0...208.0)

Spread cm<sup>3</sup> : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 144.0...146.0

1000 s: (141.0...149.0)

Spread cm<sup>3</sup> : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 1145...1161

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 200.0...220.0

1000 s: (196.0...224.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 04.94  
Replaces : 04.92  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 919  
  
Injection pump  
Pump designation : PES6P120A720LS7237  
-11  
EP type number : 0 412 726 911  
Governor  
Governor design. : RQ300/1100PA1013-4  
Governor no. : 0 421 801 711

Cust. part no. : 0220743402

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.75...13.85

Del.quantity cm3/ : 20.3...20.5

100 s: (20.0...20.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300  
Rack travel in mm : 6.20...6.80  
Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 1400  
Del.quantity : 203.0...205.0  
1000 : (200.0...208.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 92.0...100.0

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

#### Testing:

1st rack travel in: 12.80  
Speed rpm : 1145...1161  
2nd rack travel in: 4.00  
Speed rpm : 1225...1255  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Control lever  
position degrees: 69.0...77.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

#### Testing:

Speed rpm : 200  
Minimum rack travel: 9.00  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 355...395

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 600  
Rack travel mm : 12.75...12.85

#### Measurement

Speed 1/min : 500

1st pressure hPa : 950  
Rack travel in m: 13.45...13.65  
2nd pressure hPa : --  
Rack travel in m: 12.00...12.30

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1700  
Speed rpm : 1400  
Del.quantity cm<sup>3</sup>/ : 203.0...205.0  
1000 s: (200.0...208.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (9.0)  
Aneroid pressure h: 1400  
Speed rpm : 800

Del.quantity cm<sup>3</sup>/ : 205.0...209.0  
1000 s: (202.0...212.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 144.0...146.0  
1000 s: (141.0...149.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.80  
Speed rpm : 1145...1161

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : 12.92  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 919X  
  
Injection pump  
Pump designation : PES6P120A720LS7237  
-10  
EP type number : 0 412 726 872  
Governor  
Governor design. : RQ300/1100PA1013-1  
Governor no. : 0 421 801 603  
  
Cust. part no. : 0220743402

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.75...13.85

Del.quantity cm3/ : 20.3...20.5

100 s: (20.0...20.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300  
Rack travel in mm : 6.20...6.80  
Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 1400  
Del.quantity : 203.0...205.0  
1000 : (200.0...208.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 92.0...100.0

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.80  
Speed rpm : 1145...1161  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever  
position degrees: 69.0...77.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

Testing:

Speed rpm : 200  
Minimum rack travel: 8.30  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 370...410

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 12.00...12.30

Measurement

Speed 1/min : 500

1st pressure hPa : 600  
Rack travel in m: 12.75...12.85  
2nd pressure hPa : 950  
Rack travel in m: 13.45...13.65

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400  
Speed rpm : 800  
Del.quantity cm3/ : 205.0...209.0  
1000 s: (202.0...212.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm3/ : 144.0...146.0  
1000 s: (141.0...149.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.80  
Speed rpm : 1145...1161

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : 02.92  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 923  
  
Injection pump  
Pump designation : PES6P120A720LS7237  
-11  
EP type number : 0 412 726 911  
Governor  
Governor design. : RQ300/1100PA1013-5  
Governor no. : 0 421 801 712

Cust. part no. : 0220743502

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 120...140

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.65...13.75

Del.quantity cm3/ : 19.8...20.0

100 s: (19.5...20.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.60...6.20

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1400

Del.quantity : 198.0...200.0

1000 : (195.0...203.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 95.0...103.0

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.70  
Speed rpm : 1145...1161  
2nd rack travel in: 4.00  
Speed rpm : 1245...1275  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever  
position degrees: 72.0...80.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

Testing:

Speed rpm : 200  
Minimum rack travel: 9.00  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 355...395

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 12.00...12.30

Measurement

Speed 1/min : 500

1st pressure hPa : 600  
Rack travel in m: 12.65...12.75  
2nd pressure hPa : 800  
Rack travel in m: 12.95...13.05

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400  
Speed rpm : 1100

Del.quantity cm3/ : 198.0...200.0  
1000 s: (195.0...203.0)  
Spread cm3 : 5.00  
1000 s: (9.0)  
Aneroid pressure h: 1400  
Speed rpm : 800  
Del.quantity cm3/ : 201.0...205.0  
1000 s: (198.0...208.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 144.0...146.0  
1000 s: (141.0...149.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70  
Speed rpm : 1145...1161

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.94  
Replaces : 02.94  
Test oil : ISO-4113

Combination no. : 0 402 746 923X

Injection pump  
Pump designation : PES6P120A720LS7237-1  
EP type number : 0 412 726 872  
Governor  
Governor design. : RQ300/1100PA1013-2  
Governor no. : 0 421 801 611

Cust. part no. : 0220743502

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 120...140

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values —

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.65...13.75

Del.quantity cm3/ : 19.8...20.0

100 s: (19.5...20.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 6.20...6.80

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1100

Aneroid pressure h: 1400

Del.quantity : 198.0...200.0

1000 : (195.0...203.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 95.0...103.0

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 12.70  
Speed rpm : 1145...1161  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 72.0...80.0  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.50

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.30  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 370...410

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 12.00...12.30

Measurement  
Speed 1/min : 500

1st pressure hPa : 600  
Rack travel in m: 12.65...12.75  
2nd pressure hPa : 800  
Rack travel in m: 12.85...13.05

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1400  
Speed rpm : 800

Del.quantity cm3/ : 201.0...205.0  
1000 s: (198.0...208.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 144.0...146.0  
1000 s: (141.0...149.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.70  
Speed rpm : 1145...1161

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PER  
Edition : 14.02.94  
Replaces : -  
Test oil : ISO-4113

Injection pump  
Pump designation : PES6MW100/720/3RS151  
8-1  
EP type number : 0 413 206 018  
Governor  
Governor design. : RQV325...1300MW133-1  
K  
Governor no. : 0 420 083 984

Customer-spec. information  
Customer : PERKINS

Engine : 180TI

1st version kW : 134.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 688 901 101

Opening  
pressure, bar : 207...210

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.95...5.05  
: (4.90...5.10)

Rack travel in mm : 13.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.30...14.40

Del.quantity cm<sup>3</sup>/ : 13.8...14.0

100 s: (13.5...14.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 325.0

Rack travel in mm : 5.7...5.9

Del.quantity cm<sup>3</sup>/ : 2.1...2.5

100 s: (1.9...2.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
travel mm : 1.45...1.95

2nd speed rpm : 361  
travel mm : 2.09...2.59

3rd speed rpm : 500  
travel mm : 3.67...4.17

4th speed rpm : 881  
travel mm : 6.21...6.71

5th speed rpm : 1355  
travel mm : 9.98...10.48

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1380

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 900

Del.quantity : 138.0...140.0

1000 : (135.0...143.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 118...126

### Testing:

1st rack travel in: 13.30  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1460...1490  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 5.8

### Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 325  
Rack travel in mm : 5.40...5.60

## Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 1300  
Pressure hPa : 900  
Rack travel mm : 14.30...14.40

### Measurement

Speed 1/min : 1300

1st pressure hPa : -  
Rack travel in m: 9.3...9.5  
2nd pressure hPa : 250  
Rack travel in m: 10.25...10.35  
3rd pressure hPa : 400  
Rack travel in m: 13.05...13.35

## START CUT-OUT

Speed 1/min : 240 (270)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 900  
Speed rpm : 1300  
Del.quantity cm<sup>3</sup>/ : 138.0...143.0  
1000 s: (135.0...143.0)

Spread cm<sup>3</sup> : 4.00  
1000 s: (7.50)  
Aneroid pressure h: 900  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 135.0...139.0  
1000 s: (132.0...142.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)  
Aneroid pressure h: 900  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 106.0...110.0  
1000 s: (103.0...113.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 71.0...73.0  
1000 s: (69.0...75.0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.30  
Speed rpm : 1340...1350

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 78.0...92.0  
1000 s: (75.0...95.0)

## LOW IDLE

Speed rpm : 325  
Rack travel in mm : 5.7...5.9  
Del.quantity cm<sup>3</sup>/ : 21.0...25.0  
1000 s: (18.5...27.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

## Remarks:

Start-of-delivery blocking 46.5°  
before start of delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 15.02.94  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 244 032  
Injection pump  
Pump designation : PES4MW100/720RS1519-2  
EP type number : 0 413 204 017  
Governor  
Governor design. : RQV300...1300MW132-1  
Governor no. : 0 420 083 292

Customer-spec. information  
Customer : MB

Engine : OM364LA

1st version kW : 103.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 688 901 101

Opening  
pressure, bar : 207...210

Test Lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.50...4.60  
: (4.45...4.65)

Rack travel in mm : 21.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.85...13.95

Del.quantity cm3/ : 12.5...12.7

100 s: (12.2...13.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 3.8...4.0

Del.quantity cm3/ : 1.0...1.4

100 s: (0.75...1.65)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 0.66...1.16

2nd speed rpm : 629  
travel mm : 2.9...3.4

3rd speed rpm : 820  
travel mm : 3.86...4.34

4th speed rpm : 1150  
travel mm : 5.7...6.2

5th speed rpm : 1354  
travel mm : 7.52...8.02

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1510

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1400

Del.quantity : 125.0...127.0

1000 : (122.0...130.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 112...120

### Testing:

1st rack travel in: 12.90  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1450...1480  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 67...75

### Testing:

Speed rpm : 200  
Minimum rack travel: 4.50  
Speed rpm : 300  
Rack travel in mm : 3.8...4.0

Aneroid/Altitude  
Compensator Test

## 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1400  
Rack travel mm : 13.85...13.95

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.0...11.2  
2nd pressure hPa : 550  
Rack travel in m: 11.50...11.70  
3rd pressure hPa : 800  
Rack travel in m: 13.0...13.2

## START CUT-OUT

Speed 1/min : 200 (220)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1400  
Speed rpm : 1300  
Del.quantity cm3/ : 125.0...127.0  
1000 s: (122.0...130.0)  
Spread cm3 : 5.00  
1000 s: (7.50)  
Aneroid pressure h: 1400

Speed rpm : 750  
Del.quantity cm3/ : 122.0...126.0  
1000 s: (119.0...129.0)  
Spread cm3 : 6.00  
1000 s: (9.00)  
Aneroid pressure h: 1400  
Speed rpm : 600  
Del.quantity cm3/ : 124.0...128.0  
1000 s: (121.0...131.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 66.0...68.0  
1000 s: (64.0...70.0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack travel: 12.90  
Speed rpm : 1340...1350

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...145.0  
1000 s: (132.0...148.0)

## LOW IDLE

Speed rpm : 300  
Rack travel in mm : 3.8...4.0  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 15.02.94  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 403 244 032  
  
Injection pump  
Pump designation : PES4MW100/72ORS1519-  
2  
EP type number : 0 413 204 017  
Governor  
Governor design. : RQV300...1300MW132-1  
Governor no. : 0 420 083 292

Customer spec. information  
Customer : MB

Engine : OM364LA

1st version kW : 103.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 688 901 101

Opening  
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.50...4.60  
: (4.45...4.65)

Rack travel in mm : 21.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.85...13.95

Del. quantity cm<sup>3</sup>/ : 12.5...12.7

100 s: (12.2...13.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 3.8...4.0

Del. quantity cm<sup>3</sup>/ : 1.0...1.4

100 s: (0.75...1.65)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.66...1.16

2nd speed rpm : 629

travel mm : 2.9...3.4

3rd speed rpm : 820

travel mm : 3.84...4.34

4th speed rpm : 1150

travel mm : 5.7...6.2

5th speed rpm : 1354

travel mm : 7.52...8.02

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1300

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1400

Del. quantity : 125.0...127.0

1000 : (122.0...130.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 112...120

Testing:  
1st rack travel in: 12.9  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1450...1480  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 67...75

Testing:  
Speed rpm : 200  
Minimum rack travel: 4.50  
Speed rpm : 300  
Rack travel in mm : 3.8...4.0

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1400  
Rack travel mm : 13.85...13.95

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.0...11.2  
2nd pressure hPa : 550  
Rack travel in m: 11.5...11.7  
3rd pressure hPa : 800  
Rack travel in m: 13.0...13.2

## START CUT-OUT

Speed 1/min : 200 (220)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1400  
Speed rpm : 1300  
Del.quantity cm3/ : 125.0...127.0  
1000 s: (122.0...130.0)  
Spread cm3 : 4.00  
1000 s: (7.50)  
Aneroid pressure h: 1400

Speed rpm : 750  
Del.quantity cm3/ : 122.0...126.0  
1000 s: (119.0...129.0)  
Spread cm3 : 6.00  
1000 s: (9.00)  
Aneroid pressure h: 1400  
Speed rpm : 600  
Del.quantity cm3/ : 124.0...128.0  
1000 s: (121.0...131.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 66.0...68.0  
1000 s: (64.0...70.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.90  
Speed rpm : 1340...1350

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...145.0  
1000 s: (137.0...148.0)

## LOW IDLE

Speed rpm : 300  
Rack travel in mm : 3.8...4.0  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 15.02.94  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 244 034  
Injection pump  
Pump designation : PES4MM100/720RS1519-3  
EP type number : 0 413 204 018  
Governor  
Governor design. : RGV300...1300MW132-3  
Governor no. : 0 420 083 296

Customer-spec. information  
Customer : MB

Engine : OM364LA

1st version kW : 77.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 688 901 101

Opening  
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.50...4.60  
: (4.45...4.65)

Rack travel in mm : 21.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.5...11.6

Del.quantity cm3/ : 9.4...9.6

100 s: (9.2...9.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 3.9...4.1

Del.quantity cm3/ : 1.0...1.4

100 s: (0.75...1.65)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 0.66...1.16

2nd speed rpm : 629  
travel mm : 2.9...3.4

3rd speed rpm : 800  
travel mm : 3.75...4.25

4th speed rpm : 1140  
travel mm : 5.63...6.13

5th speed rpm : 1345  
travel mm : 7.39...7.89

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1400

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 94.0...96.0

1000 : (92.0...98.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 106...114

### Testing:

1st rack travel in: 10.5  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1420...1450  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 65...73

### Testing:

Speed rpm : 200  
Minimum rack travel: 4.50  
Speed rpm : 300  
Rack travel in mm : 3.9...4.1

Aneroid/Altitude  
Compensator Test

## 1st version

### Setting

Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.5...11.6

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.6...10.8  
2nd pressure hPa : 500  
Rack travel in m: 11.0...11.2

## START CUT-OUT

Speed 1/min : 200 (220)

## FUEL DELIVERY CHARACTERISTICS

## 1st version

Aneroid pressure h: 1000  
Speed rpm : 1300  
Del.quantity cm3/ : 94.0...96.0  
1000 s: (92.0...98.0)  
Spread cm3 : 3.50  
1000 s: (6.00)  
Aneroid pressure h: 1000  
Speed rpm : 750

Del.quantity cm3/ : 85.5...88.5  
1000 s: (83.0...91.0)  
Spread cm3 : 5.00  
1000 s: (7.00)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 65.0...67.0  
1000 s: (63.0...69.0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1340...1350

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 125.0...135.0  
1000 s: (122.0...138.0)

## LOW IDLE

Speed rpm : 300  
Rack travel in mm : 3.9...4.1  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 15.02.94  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 244 035  
Injection pump  
Pump designation : PES4MM100/72ORS1519-3  
EP type number : 0 413 204 018  
Governor  
Governor design. : RQV300...1300MW132-3  
Governor no. : 0 420 083 296

Customer-spec. information  
Customer : MB

Engine : OM364LA

1st version kW : 77.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 688 901 101

Opening  
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 4.50...4.60  
: (4.45...4.65)

Rack travel in mm : 21.00  
Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.5...11.6

Del. quantity cm<sup>3</sup>/ : 9.4...9.6

100 s: (9.2...9.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 3.9...4.1

Del. quantity cm<sup>3</sup>/ : 1.0...1.4

100 s: (0.75...1.65)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.66...1.16

2nd speed rpm : 629

travel mm : 2.9...3.4

3rd speed rpm : 800

travel mm : 3.75...4.25

4th speed rpm : 1140

travel mm : 5.63...6.13

5th speed rpm : 1345

travel mm : 7.39...7.89

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1400

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del. quantity : 94.0...96.0

1000 : (92.0...98.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 106...114

Testing:  
1st rack travel in: 10.5  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1420...1450  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 65...73

Testing:  
Speed rpm : 200  
Minimum rack travel: 4.50  
Speed rpm : 300  
Rack travel in mm : 3.9...4.1

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.5...11.6

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.6...10.8  
2nd pressure hPa : 500  
Rack travel in m: 11.0...11.2

## START CUT-OUT

Speed 1/min : 200 (220)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 1300  
Del.quantity cm3/ : 94.0...96.0  
1000 s: (92.0...98.0)  
Spread cm3 : 3.50  
1000 s: (6.00)  
Aneroid pressure h: 1000  
Speed rpm : 750

Del.quantity cm3/ : 85.5...88.5  
1000 s: (83.0...91.0)  
Spread cm3 : 5.00  
1000 s: (7.00)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 65.0...67.0  
1000 s: (63.0...69.0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1340...1350

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 125.0...135.0  
1000 s: (122.0...138.0)

## LOW IDLE

Speed rpm : 300  
Rack travel in mm : 3.9...4.1  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 15.02.94  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 244 036  
Injection pump  
Pump designation : PES4MW100/720RS1519-3  
EP type number : 0 413 204 018  
Governor  
Governor design. : RQV300...1300MW132-5  
Governor no. : 0 420 083 308

Customer-spec. information  
Customer : MB

Engine : OM364LA

1st version kw : 77.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 688 901 101

Opening  
pressure, bar : 207...210

Test Lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.50...4.60  
: (4.45...4.65)

Rack travel in mm : 21.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.5...11.6

Del.quantity cm3/ : 9.4...9.6

100 s: (9.2...9.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 3.9...4.1

Del.quantity cm3/ : 1.0...1.4

100 s: (0.75...1.65)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1400

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 94.0...96.0

1000 : (92.0...98.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 106...114

Testing:

1st rack travel in: 10.5

Speed rpm : 1340...1350

2nd rack travel in: 4.00

Speed rpm : 1420...1450

4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 65...73

Testing:

Speed rpm : 200  
Minimum rack travel: 4.50  
Speed rpm : 300  
Rack travel in mm : 3.9...4.1

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.5...11.6

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in mm: 10.6...10.8  
2nd pressure hPa : 500  
Rack travel in mm: 11.0...11.2

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version:

Aneroid pressure h: 1000  
Speed rpm : 1300  
Del. quantity cm<sup>3</sup>/ : 94.0...96.0  
1000 s: (92.0...98.0)

Spread cm<sup>3</sup> : 3.50  
1000 s: (6.00)

Aneroid pressure h: 1000  
Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 85.5...88.5  
1000 s: (83.0...91.0)

Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 65.0...67.0  
1000 s: (63.0...69.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50

K06

Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 125.0...135.0  
1000 s: (122.0...138.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 3.9...4.1  
Del. quantity cm<sup>3</sup>/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 15.02.94  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 244 037  
Injection pump  
Pump designation : PES4MW100/720RS1519-2  
EP type number : 0 413 204 017  
Governor  
Governor design. : RQV300...1300MW132-6  
Governor no. : 0 420 083 309

Customer-spec. information  
Customer : MB

Engine : OM364LA

1st version kW : 103.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 688 901 101

Opening  
pressure, bar : 207...210

Test Lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.50...4.60  
: (4.45...4.65)

Rack travel in mm : 21.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.85...13.95

Del.quantity cm3/ : 12.5...12.7

100 s: (12.2...13.0)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 3.7...3.9

Del.quantity cm3/ : 1.0...1.4

100 s: (0.75...1.65)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1400

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1400

Del.quantity : 125.0...127.0

1000 : (122.0...130.0)

Spread cm3 : 4.0

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 112...120

Testing:

1st rack travel in: 12.9

Speed rpm : 1340...1350

2nd rack travel in: 4.00

Speed rpm : 1435...1465

4th rack travel in: 1550

Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 67...75

#### Testing:

Speed rpm : 200  
Minimum rack travel: 4.50  
Speed rpm : 300  
Rack travel in mm : 3.7...3.9

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1400  
Rack travel mm : 13.85...13.95

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.7...10.9  
2nd pressure hPa : 550  
Rack travel in m: 11.5...11.7  
3rd pressure hPa : 800  
Rack travel in m: 13.0...13.2

#### START CUT-OUT

Speed 1/min : 200 (220)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1400  
Speed rpm : 1300  
Del.quantity cm<sup>3</sup>/ : 125.0....127.0  
1000 s: (122.0...130.0)  
Spread cm<sup>3</sup> : 4.0  
1000 s: (7.50)  
Aneroid pressure h: 1400  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 122.0...126.0  
1000 s: (119.0...129.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)  
Aneroid pressure h: 1400  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 126.0...130.0  
1000 s: (123.0...133.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 66.0...68.0  
1000 s: (64.0...70.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.9  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...145.0  
1000 s: (132.0...148.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 3.7...3.9  
Del.quantity cm<sup>3</sup>/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 10.02.94  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 246 034  
Injection pump  
Pump designation : PES6MW100/720RS1517-  
2  
EP type number : 0 413 206 019  
Governor  
Governor design. : RQV300...1300MW132  
Governor no. : 0 420 083 291

Customer-spec. information  
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 177.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 688 901 101

Opening  
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.50...4.60  
: (4.45...4.65)

Rack travel in mm : 21.00...0.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.10...14.20

Del.quantity cm<sup>3</sup>/ : 12.8...13.0

100 s: (12.5...13.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 3.9...4.1

Del.quantity cm<sup>3</sup>/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.77...1.27

2nd speed rpm : 490

travel mm : 2.0...2.5

3rd speed rpm : 710

travel mm : 2.78...3.28

4th speed rpm : 1100

travel mm : 4.51...5.01

5th speed rpm : 1353

travel mm : 6.45...6.95

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1400

Del.quantity : 128.0...130.0

1000 : (125.0...133.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 116...124

Testing:  
1st rack travel in: 13.10  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1475...1505  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 62...70  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.0

Testing:  
Speed rpm : 200  
Minimum rack travel: 5.00  
Speed rpm : 300  
Rack travel in mm : 3.90...4.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1400  
Rack travel mm : 14.10...14.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.00...10.20  
2nd pressure hPa : 500  
Rack travel in m: 10.60...10.80  
3rd pressure hPa : 850  
Rack travel in m: 13.10...13.30

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1400  
Speed rpm : 1300  
Del.quantity cm3/ : 128.0...130.0  
1000 s: (125.0...133.0)  
Spread cm3 : 4.00  
1000 s: (7.5)  
Aneroid pressure h: 1400  
Speed rpm : 750  
Del.quantity cm3/ : 128.0...132.0  
1000 s: (125.0...135.0)

Spread cm3 : 6.00  
1000 s: (9.00)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 44.0...46.0  
1000 s: (42.0...48.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.10  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...145.0  
1000 s: (132.0...148.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 3.90...4.10  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 15.02.94  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 246 035  
Injection pump  
Pump designation : PES6MW100/720RS1517-3  
EP type number : 0 413 206 020  
Governor  
Governor design. : RGV300...1300MW132-2  
Governor no. : 0 420 083 293

Customer-spec. information  
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 125.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 688 901 101

Opening  
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.50...4.60  
: (4.45...4.65)

Rack travel in mm : 21.00...0.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.95...12.05

Del.quantity cm3/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 4.0...4.2

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.77...1.27

2nd speed rpm : 490

travel mm : 2.0...2.5

3rd speed rpm : 710

travel mm : 2.78...3.28

4th speed rpm : 1100

travel mm : 4.51...5.01

5th speed rpm : 1353

travel mm : 6.45...6.95

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 112...120

Testing:

1st rack travel in: 11.0  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1455...1485  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 67...75  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.1

Testing:

Speed rpm : 200  
Minimum rack travel: 5.00  
Speed rpm : 300  
Rack travel in mm : 4.0...4.2

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 11.95...12.05

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.8...9.7  
2nd pressure hPa : 150  
Rack travel in m: 10.25...10.45  
3rd pressure hPa : 300  
Rack travel in m: 11.25...11.45

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
Speed rpm : 1300  
Del.quantity cm3/ : 101.0...103.0  
1000 s: (99.0...105.0)  
Spread cm3 : 3.50  
1000 s: (6.0)  
Aneroid pressure h: 1000  
Speed rpm : 750  
Del.quantity cm3/ : 91.5...94.5  
1000 s: (89.0...97.0)

Spread cm3 : 5.50  
1000 s: (7.00)  
Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm3/ : 93.5...96.5  
1000 s: (91.0...99.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 52.0...54.0  
1000 s: (50.0...56.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.0  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 110.0...120.0  
1000 s: (107.0...123.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.0...4.2  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 15.02.94  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 246 036  
 Injection pump  
 Pump designation : PES6MM100/720RS1517-  
 2  
 EP type number : 0 413 206 019  
 Governor  
 Governor design. : RGV300...1300MM132-4  
 Governor no. : 0 420 083 299

Customer spec. information  
 Customer : MB-NFZ

Engine : OM366LA

1st version kW : 155.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 688 901 101

Opening  
 pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.50...4.60  
 : (4.45...4.65)

Rack travel in mm : 21.00...0.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.45...13.55

Del. quantity cm<sup>3</sup>/ : 11.8...12.0

100 s: (11.6...12.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 3.9...4.1

Del. quantity cm<sup>3</sup>/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.77...1.27

2nd speed rpm : 490

travel mm : 2.0...2.5

3rd speed rpm : 710

travel mm : 2.78...3.28

4th speed rpm : 1100

travel mm : 4.51...5.01

5th speed rpm : 1353

travel mm : 6.45...6.95

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del. quantity : 118.0...120.0

1000 : (116.0...122.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 114...122

Testing:

1st rack travel in: 12.5  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1470...1500  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 68...76  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.0

Testing:

Speed rpm : 200  
Minimum rack travel: 5.00  
Speed rpm : 300  
Rack travel in mm : 3.9...4.1

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 13.45...13.55

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.1...10.3  
2nd pressure hPa : 300  
Rack travel in m: 10.7...10.9  
3rd pressure hPa : 600  
Rack travel in m: 12.5...12.7

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
Speed rpm : 1300  
Del.quantity cm3/ : 118.0...120.0  
1000 s: (116.0...122.0)  
Spread cm3 : 3.50  
1000 s: (6.0)  
Aneroid pressure h: 1000  
Speed rpm : 750  
Del.quantity cm3/ : 117.5...120.5  
1000 s: (115.0...123.0)

Spread cm3 : 5.50  
1000 s: (7.00)  
Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm3/ : 117.5...120.5  
1000 s: (115.0...123.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 50.0...52.0  
1000 s: (48.0...54.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.5  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 125.0...135.0  
1000 s: (122.0...138.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 3.9...4.1  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 07.04.94  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 276 005  
Injection pump  
Pump designation : PES6MW100/72ORS1517-  
1  
EP type number : 0 413 206 017  
Governor  
Governor design. : RSV350...1200MWOA355  
Governor no. : 0 420 085 228

Cust. part no. : 0250740102

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM 366 LA

1st version kW : 100.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.5...4.6  
: (4.45...4.65)  
Rack travel in mm : 21.0  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-130-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.0...11.1

Del.quantity cm3/ : 9.4...9.6

100 s: (9.2...9.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 3.2...3.4

Del.quantity cm3/ : 1.0...1.4

100 s: (0.8...1.6)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.3...0.9

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 1000

Del.quantity : 94.0...96.0

1000 : (92.0...98.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 92...100

Setting point:

Speed rpm : 800

Rack travel in mm : 0.65

Testing:

1st rack travel in: 10.0  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1305...1335  
4th rack travel in: 1400  
Speed rpm : 0.3...1.7

LOW IDLE 1

Control lever  
position degrees: 62...70  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 3.3  
Speed rpm : 350  
Rack travel in mm : 3.2...3.4

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.95...11.15

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.1...10.3  
2nd pressure hPa : 300  
Rack travel in m: 10.4...10.6  
3rd pressure hPa : 380  
Rack travel in m: 10.7...10.9

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
Speed rpm : 750  
Del.quantity cm3/ : 85.5...88.5  
1000 s: (83.0...91.0)  
Spread cm3 : 5.5  
1000 s: (7.00)  
Aneroid pressure h: -  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 68.0...70.0  
1000 s: (66.0...72.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.0  
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 90.0...100.0  
1000 s: (87.0...103.0)

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 3.2...3.4  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.00)

Remarks:

:

Check hydraulic latching of starting  
fuel delivery with 1.5 bar air.

Set pneumatic shutoff device to  
control-rod stop = 0.5...1.5 mm  
control-rod travel at 4.5 bar  
atmospheric pressure.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 07.04.94  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 403 276 006  
  
Injection pump  
Pump designation : PES6MW100/720RS1517-  
1  
EP type number : 0 413 206 017  
Governor  
Governor design. : RSV350...1200MWA355  
-1  
Governor no. : 0 420 085 229  
  
Cust. part no. : 0250740202  
  
Customer-spec. information  
Customer : MERCEDES-BENZ  
  
Engine : OM 366 LA  
  
1st version kw : 120.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 419 992 198  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 1 688 901 101  
  
Opening  
pressure, bar : 207...210  
  
Test Lines : 1 680 750 089  
  
Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

K17

Prestroke mm : 4.5...4.6  
: (4.45...4.65)  
Rack travel in mm : 21.0  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200  
Rack travel in mm : 11.4...11.5  
Del. quantity cm<sup>3</sup>/ : 10.1...10.3  
100 s: (9.9...10.5)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.6)  
2nd speed rpm : 300.0  
Rack travel in mm : 3.2...3.4  
Del. quantity cm<sup>3</sup>/ : 1.0...1.4  
100 s: (0.8...1.6)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.3...0.9

Governor spring pre-tension  
Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1200  
Aneroid pressure h: 1000  
Del. quantity : 101.0...103.0  
1000 : (99.0...105.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control Lever  
position degrees: 92...100

Setting point:  
Speed rpm : 800

Rack travel in mm : 0.65

Testing:

1st rack travel in: 10.4  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1305...1335  
4th rack travel in: 1400  
Speed rpm : 0.3...1.7

LOW IDLE 1

Control lever  
position degrees: 62...70  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 3.3  
Speed rpm : 350  
Rack travel in mm : 3.2...3.4

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.35...11.55

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.55...9.75  
2nd pressure hPa : 350  
Rack travel in m: 9.9...10.1  
3rd pressure hPa : 530  
Rack travel in m: 10.9...11.1

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
Speed rpm : 750  
Del.quantity cm3/ : 97.5...100.5  
1000 s: (95.0...103.0)  
Spread cm3 : 5.5  
1000 s: (7.00)  
Aneroid pressure h: -  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 62.0...64.0  
1000 s: (60.0...66.0)

BREAKAWAY

K18

1st version

1mm rack travel less than

full load rack tr: 10.4  
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 90.0...100.0  
1000 s: (87.0...103.0)

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 3.2...3.4  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.00)

Remarks:

:

Check hydraulic latching of starting  
fuel delivery with 1.5 bar air.

Set pneumatic shutoff device to  
control-rod stop = 0.5...1.5 mm  
control-rod travel at 4.5 bar  
atmospheric pressure.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 14.04.94  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 276 009  
Injection pump  
Pump designation : PES6MW100/720RS1517-  
2  
EP type number : 0 413 206 019  
Governor  
Governor design. : RSV350...1200MWA357  
Governor no. : 0 420 085 233

Cust. part no. : 0250740402

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM 366 LA

1st version kW : 155.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 4.5...4.6  
: (4.45...4.65)  
Rack travel in mm : 21.0  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 14.0...14.1

Del. quantity cm3/ : 12.7...12.9

100 s: (12.4...13.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0  
Rack travel in mm : 3.2...3.4  
Del. quantity cm3/ : 1.0...1.4  
100 s: (0.8...1.6)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3

Speed rpm : 800  
Rack travel in mm : 0.3...0.9

Governor spring pre-tension  
Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1200  
Aneroid pressure h: 1500  
Del. quantity : 127.0...129.0  
1000 : (124.0...132.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 92...100

Setting point:  
Speed rpm : 800  
Rack travel in mm : 0.5

Testing:

1st rack travel in: 13.0  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1310...1340  
4th rack travel in: 1400  
Speed rpm : 0.3...1.7

LOW IDLE 1

Control lever  
position degrees: 62...70  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 3.3

Testing:

Speed rpm : 100  
Minimum rack travel: 19.0  
Speed rpm : 350  
Rack travel in mm : 3.2...3.4

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1500  
Rack travel mm : 14.0...14.1

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.45...9.65  
2nd pressure hPa : 350  
Rack travel in m: 10.4...10.6  
3rd pressure hPa : 750  
Rack travel in m: 12.9...13.1

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500  
Speed rpm : 750  
Del.quantity cm3/ : 128.0...132.0  
1000 s: (125.0...135.0)  
Spread cm3 : 6.0  
1000 s: (9.00)  
Aneroid pressure h: -  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 42.0...44.0  
1000 s: (40.0...46.0)

K20

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.0  
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...150.0  
1000 s: (137.0...153.0)

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 3.2...3.4  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.00)

Remarks:

:

Check hydraulic latching of starting  
fuel delivery with 1.5 bar air.

Set pneumatic shutoff device to  
control-rod stop = 0.5...1.5 mm  
control-rod travel at 4.5 bar  
atmospheric pressure.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 15.09.93  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 403 444 149  
  
Injection pump  
Pump designation : PES4MW100/720RS1151  
EP type number : 0 413 404 104  
Governor  
Governor design. : RQV300...1300MW50-27  
Governor no. : 0 420 083 273

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM364A

1st version kW : 79.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)

Rack travel in mm : 10.50

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.8...10.9

Del.quantity cm3/ : 8.2...8.4

100 s: (8.0...8.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.2...1.6

2nd speed rpm : 500  
travel mm : 2.7...3.3

3rd speed rpm : 1350  
travel mm : 8.5...8.7

4th speed rpm : 1450  
travel mm : 9.4...10.0

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 82.0...84.0

1000 : (80.0...86.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 110...118

Testing:

1st rack travel in: 9.8  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1420...1450  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 74...82

Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.3...6.5

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.6...11.8

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.7...9.8  
2nd pressure hPa : 200  
Rack travel in m: 10.7...10.9  
3rd pressure hPa : 300  
Rack travel in m: 11.3...11.5

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 1300  
Del.quantity cm3/ : 82.0...84.0  
1000 s: (80.0...86.0)  
Spread cm3 : 3.50  
1000 s: (6.00)  
Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm3/ : 75.0...78.0  
1000 s: (72.5...80.5)

Spread cm3 : 5.00  
1000 s: (7.00)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 46.0...48.0  
1000 s: (44.0...50.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.8  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 78.0...88.0  
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.3...6.5  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 21.08.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 446 295  
Injection pump  
Pump designation : PES6MM100/720RS1131-1  
EP type number : 0 413 406 165  
Governor  
Governor design. : RQV300...1300MW67-5  
Governor no. : 0 420 083 262

Customer spec. information  
Customer : MERCEDES-BENZ

Engine : OM 366 LA

1st version kW : 155.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70  
: (3.55...3.75)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.3

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350  
travel mm : 8.40...8.80

2nd speed rpm : 880  
travel mm : 4.90...5.10

3rd speed rpm : 500  
travel mm : 2.70...3.30

4th speed rpm : 300  
travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:

1st rack travel in: 12.10  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1450...1480  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:

Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 6.10...6.30

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.20...10.30

Measurement

Speed 1/min : 500

1st pressure hPa : 200  
Rack travel in m: 11.20...11.30  
2nd pressure hPa : 350  
Rack travel in m: 12.10...12.40  
3rd pressure hPa : 1000  
Rack travel in m: 13.10...13.20

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
Speed rpm : 600

Del.quantity cm3/ : 85.0...88.0  
1000 s: (82.5...90.5)  
Spread cm3 : 5.00  
1000 s: (7.00)  
Aneroid pressure h: -  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 35.0...37.0  
1000 s: (33.0...39.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...110.0  
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.10...6.30  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm3 : 3.50  
1000 s: (5.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 25.02.94  
Replaces : 03.92  
Test oil : ISO-4113  
Combination no. : 0 403 446 301  
Injection pump  
Pump designation : PES6MM100/720RS1131-1  
EP type number : 0 413 406 165  
Governor  
Governor design. : RGV300...1300MW50-22  
Governor no. : 0 420 083 268

Customer-spec. information  
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 177.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70  
: (3.55...3.75)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.40...14.50

Del. quantity cm3/ : 11.2...11.4

100 s: (11.0...11.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del. quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...9.80

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 450

travel mm : 2.60...3.20

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1340

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del. quantity : 112.0...114.0

1000 : (110.0...116.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 110...118

Testing:  
1st rack travel in: 13.40  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1470...1500  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 74...82  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 14.4...14.5

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.8...10.9  
2nd pressure hPa : 200  
Rack travel in m: 11.1...11.3  
3rd pressure hPa : 500  
Rack travel in m: 13.5...13.7

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 750  
Del.quantity cm3/ : 105.5...108.5  
1000 s: (103.0...111.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 41.0...43.0  
1000 s: (39.0...45.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.40  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...110.0  
1000 s: (97.0...113.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 15.02.94  
Replaces : 09.92  
Test oil : ISO-4113  
Combination no. : 0 403 446 302  
Injection pump  
Pump designation : PES6MW100/72ORS1131  
EP type number : 0 413 406 123  
Governor  
Governor design. : RQV300...1300MW50-24  
Governor no. : 0 420 083 270

Customer-spec. information  
Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 121.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Test lines : 1 680 715 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.75)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.90...11.00

Del. quantity cm3/ : 8.7...8.9

100 s: (8.5...9.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.3

Del. quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...10.00

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del. quantity : 87.0...89.0

1000 : (85.0...91.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 108...116

Testing:  
1st rack travel in: 9.90  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1425...1455  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.10...6.30

TORQUE CONTROL  
Dimension a mm : 0.70  
Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 750  
Rack travel in m: 11.60...11.70  
3rd speed rpm : 1100  
Rack travel in m: 11.10...11.30

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.6...11.7

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.8...9.9  
2nd pressure hPa : 200  
Rack travel in m: 10.2...10.3  
3rd pressure hPa : 300  
Rack travel in m: 11.0...11.3

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

K28

1st version  
Aneroid pressure h: 700  
Speed rpm : 1300  
Del.quantity cm3/ : 87.0...89.0  
1000 s: (85.0...91.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: 700  
Speed rpm : 750  
Del.quantity cm3/ : 85.5...88.5  
1000 s: (83.0...91.0)  
Spread cm3 : 5.00  
1000 s: (7.00)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 48.0...50.0  
1000 s: (46.0...52.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...110.0  
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.10...6.30  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 15.02.94  
Replaces : 03.92  
Test oil : ISO-4113  
  
Combination no. : 0 403 446 303  
  
Injection pump  
Pump designation : PES6MW100/720RS1131-1  
EP type number : 0 413 406 165  
Governor  
Governor design. : RQV300...1300MW50-25  
Governor no. : 0 420 083 271

Customer-spec. information  
Customer : MB-NFZ

Engine : OM366LA

1st version kw : 155.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70  
: (3.55...3.75)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450  
travel mm : 9.40...10.00

2nd speed rpm : 1350  
travel mm : 8.50...8.70

3rd speed rpm : 500  
travel mm : 2.70...3.30

4th speed rpm : 300  
travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 112...120

Testing:

1st rack travel in: 12.10  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1455...1485  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 74...82  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 13.1...13.2

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.5...10.6  
2nd pressure hPa : 200  
Rack travel in m: 11.2...11.3  
3rd pressure hPa : 350  
Rack travel in m: 12.4...12.7

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 87.0...91.0  
1000 s: (85.0...93.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

L02

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 41.0...43.0  
1000 s: (39.0...45.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...110.0  
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Del.quantity cm<sup>3</sup>/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 15.03.94  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 446 321  
Injection pump  
Pump designation : PES6MW100/720RS1131  
EP type number : 0 413 406 123  
Governor  
Governor design. : RQV300...1300MW50-31  
Governor no. : 0 420 083 294

Cust. part no. : 0240748802

Customer-spec. information  
Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 121.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Test lines : 1 680 715 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 8.6...8.8

100 s: (8.4...9.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0  
Rack travel in mm : 5.4...5.6  
Del.quantity cm3/ : 1.0...1.4  
100 s: (0.7...1.6)  
Spread cm3 : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.15...1.65  
2nd speed rpm : 510  
travel mm : 4.03...4.53  
3rd speed rpm : 710  
travel mm : 4.91...5.41  
4th speed rpm : 1354  
travel mm : 8.03...8.43

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1300  
Aneroid pressure h: 700  
Del.quantity : 86.0...88.0  
1000 : (84.0...90.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:

1st rack travel in: 9.50  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1425...1455  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 84...92  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.5

Testing:

Speed rpm : 200  
Minimum rack travel: 7.00  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.20...11.40

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.20...9.30  
2nd pressure hPa : 300  
Rack travel in m: 9.70...9.90  
3rd pressure hPa : 400  
Rack travel in m: 10.40...10.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 850  
Del.quantity cm3/ : 85.5...88.5  
1000 s: (83.0...91.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 48.0...50.0  
1000 s: (46.0...52.0)

L04

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 80.0...90.0  
1000 s: (77.0...93.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 16.03.94  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 446 323  
Injection pump  
Pump designation : PES6MW100/720RS1131-  
1  
EP type number : 0 413 406 165  
Governor  
Governor design. : RQV300...1300MW50-33  
Governor no. : 0 420 083 298

Cust. part no. : 0240748902

Customer-spec. information  
Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 155.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Test lines : 1 680 715 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70  
: (3.55...3.75)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.25...13.35

Del. quantity cm3/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0  
Rack travel in mm : 6.4...6.6  
Del. quantity cm3/ : 1.0...1.4  
100 s: (0.7...1.6)  
Spread cm3 : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.13...1.63  
2nd speed rpm : 510  
travel mm : 4.03...4.53  
3rd speed rpm : 720  
travel mm : 4.94...5.44  
4th speed rpm : 1360  
travel mm : 8.09...8.59

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1300  
Aneroid pressure h: 1000  
Del. quantity : 98.0...100.0  
1000 : (96.0...102.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 108...116

Testing:

1st rack travel in: 12.3  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1475...1505  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 74...82  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.4...6.6

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 13.25...13.35

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.85...11.05  
2nd pressure hPa : 200  
Rack travel in m: 11.3...11.5  
3rd pressure hPa : 350  
Rack travel in m: 12.5...12.7

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
Speed rpm : 750  
Del.quantity cm3/ : 86.0...90.0  
1000 s: (84.0...92.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 40.0...42.0  
1000 s: (38.0...44.0)

LO6

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.3  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...110.0  
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.4...6.6  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 15.03.94  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 446 324  
Injection pump  
Pump designation : PES6MM100/720RS1131-1  
EP type number : 0 413 406 165  
Governor  
Governor design. : RQV300...1300MW136  
Governor no. : 0 420 083 300

Cust. part no. : 0240749002

Customer-spec. information  
Customer : MB-NFZ

Engine : OM 366 LA

1st version kW : 177.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Test lines : 1 680 715 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.6...3.7  
: (3.55...3.75)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.4...14.5

Del.quantity cm3/ : 11.1...11.3

100 s: (10.9...11.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.5...6.7

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.89...1.39

2nd speed rpm : 578

travel mm : 4.46...4.96

3rd speed rpm : 640

travel mm : 4.85...5.35

4th speed rpm : 1355

travel mm : 9.93...10.43

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 111.0...113.0

1000 : (109.0...115.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 110...118

Testing:  
1st rack travel in: 13.4  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1445...1475  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 65...73  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.6

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.5...6.7

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 14.4...14.5

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.95...11.05  
2nd pressure hPa : 200  
Rack travel in m: 11.25...11.45  
3rd pressure hPa : 500  
Rack travel in m: 13.95...14.15

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1300  
Del.quantity cm3/ : 111.0...113.0  
1000 s: (109.0...115.0)  
Spread cm3 : 3.50  
1000 s: (6.0)  
Aneroid pressure h: 1000  
Speed rpm : 750  
Del.quantity cm3/ : 104.5...107.5  
1000 s: (102.0...110.0)

Spread cm3 : 5.00  
1000 s: (7.00)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 40.0...42.0  
1000 s: (38.0...44.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.4  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...110.0  
1000 s: (97.0...113.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.5...6.7  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 7,3 C  
Edition : 30.03.94  
Replaces : 06.91  
Test oil : ISO-4113

Combination no. : 0 403 456 113

Injection pump  
Pump designation : PES6MM100/321RS1210  
EP type number : 0 413 406 201  
Governor  
Governor design. : RQ250/1050MM84-6  
Governor no. : 0 420 082 049

Cust. part no. : 3-7127

Customer-spec. information  
Customer : MAN

Engine : D 0826 LUH 250

1st version kW : 184.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.5...3.6  
: (3.3.45...3.65)  
Rack travel in mm : 9.0...12.0  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 14.0...14.1

Del.quantity cm3/ : 16.2...16.3

100 s: (15.8...16.6)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0  
Rack travel in mm : 4.9...5.1  
Del.quantity cm3/ : 1.3...1.7  
100 s: (1.05...1.95)  
Spread cm3 : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.35...1.55  
2nd speed rpm : 341  
travel mm : 3.45...3.65  
3rd speed rpm : 460  
travel mm : 5.9...6.1  
4th speed rpm : 1107  
travel mm : 6.44...6.64

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108...110  
Speed rpm : 600  
Rack travel in mm : 19.2...20.8

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 800  
Aneroid pressure h: 1100  
Del.quantity : 161.0...163.0  
1000 : (158.0...166.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 95...103

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 13.0  
Speed rpm : 1075...1090  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.0

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.5  
Speed rpm : 250  
Rack travel in mm : 4.9...5.1

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1100  
Rack travel mm : 14.0...14.1

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.2...9.3  
2nd pressure hPa : 150  
Rack travel in m: 9.5...9.6  
3rd pressure hPa : 700  
Rack travel in m: 12.8...13.1

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1100  
Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 161.5...165.5  
1000 s: (158.5...168.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.0)  
Aneroid pressure h: 1100  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 157.5...161.5  
1000 s: (154.5...164.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 67.0...69.0  
1000 s: (65.0...71.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.0  
Speed rpm : 1075...1090

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 70.0...90.0  
1000 s: (67.0...93.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.9...5.1  
Del.quantity cm<sup>3</sup>/ : 13.0...17.0  
1000 s: (10.5...19.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 6,2 F  
Edition : 30.03.94  
Replaces : 09.92  
Test oil : ISO-4113  
Combination no. : 0 403 456 120  
Injection pump  
Pump designation : PES6MW100/321RS1210  
EP type number : 0 413 406 201  
Governor  
Governor design. : RQ250/1050MW/84-11  
Governor no. : 0 420 082 066

Cust. part no. : 3-7220

Customer-spec. information  
Customer : MAN

Engine : D 0826 LUH 06

1st version kW : 184.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.5...3.6  
: (3.3.45...3.65)  
Rack travel in mm : 9.0...12.0  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 14.0...14.1

Del. quantity cm<sup>3</sup>/ : 16.1...16.3

100 s: (15.8...16.6)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.0...5.2

Del. quantity cm<sup>3</sup>/ : 1.3...1.7

100 s: (1.05...1.95)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.35...1.55

2nd speed rpm : 341

travel mm : 3.45...3.65

3rd speed rpm : 460

travel mm : 5.9...6.1

4th speed rpm : 1107

travel mm : 6.44...6.64

## GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.2...20.8

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Aneroid pressure h: 1100

Del. quantity : 161.0...163.0

1000 : (158.0...166.0)

Spread cm3 : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 99...107

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 13.0  
Speed rpm : 1097...1113  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 76...84  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.1

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.5  
Speed rpm : 250  
Rack travel in mm : 5.0...5.2

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1100  
Rack travel mm : 14.0...14.1

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.4...9.5  
2nd pressure hPa : 150  
Rack travel in m: 9.7...9.8  
3rd pressure hPa : 700  
Rack travel in m: 13.2...13.5

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1100  
Speed rpm : 600

Del.quantity cm3/ : 161.0...165.0  
1000 s: (158.0...168.0)  
Spread cm3 : 6.00  
1000 s: (9.0)  
Aneroid pressure h: 1100  
Speed rpm : 1050  
Del.quantity cm3/ : 155.0...159.0  
1000 s: (152.0...162.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 67.0...69.0  
1000 s: (65.0...71.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.0  
Speed rpm : 1097...1113

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 60.0...80.0  
1000 s: (57.0...83.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.0...5.2  
Del.quantity cm3/ : 13.0...17.0  
1000 s: (10.5...19.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 H 2  
Edition : 20.04.94  
Replaces : 01.91  
Test oil : ISO-4113

Combination no. : 0 403 466 113

Injection pump  
Pump designation : PES6MW100/120RS1137-1

EP type number : 0 413 406 157

Governor

Governor design. : RSV450...1100MW2A319-13

Governor no. : 0 420 085 114

Cust. part no. : 3195686

Customer-spec. information  
Customer : CDC

Engine : 6 CTA  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 9 410 270 183

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

L13

Test pressure, bar: 30...32

Prestroke mm : 3.5...3.6  
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing :

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.00...14.10

Del. quantity cm<sup>3</sup>/ : 15.05...15.25

100 s: (14.85...15.45)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 450.0

Rack travel in mm : 6.7...6.9

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.35...2.25)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: -

Del. quantity : 150.5...152.5

1000 : (148.5...154.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 42...50

Setting point:

Speed rpm : 800  
Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.5  
Speed rpm : 1150...1160  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1370  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 6.3

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 6.20...6.40

SET IDLE AUXILIARY SPRING

Rack travel in mm : 4.00

TORQUE CONTROL

Dimension a mm : 1.50  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 14.0...14.1  
2nd speed rpm : 1100  
Rack travel in m: 12.5...12.7  
3rd speed rpm : 950  
Rack travel in m: 13.2...13.6

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100  
Del.quantity cm3/ : 130.5...133.5  
1000 s: (128.0...136.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.5  
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 125.0...145.0  
1000 s: (122.0...148.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 450  
Rack travel in mm : 6.70...6.90  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Starting/full-load transition speed  
from holding magnet = 500 1/min.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
Edition : 20.04.94  
Replaces : 04.92  
Test oil : ISO-4113

Combination no. : 0 403 466 117JD

Injection pump  
Pump designation : PES6MM100/120RS1178  
EP type number : 0 413 406 160  
Governor  
Governor design. : RSV350...1250MW2A332  
-3  
Governor no. : 0 420 085 152

Cust. part no. : 3922489

Customer-spec. information  
Customer : CDC

Engine : 6 CTA

1st version kW : 186.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.45...3.55  
: (3.4...3.6)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050  
Rack travel in mm : 14.00...14.10  
Del. quantity cm<sup>3</sup>/ : 14.25...14.45  
100 s : (14.05...14.65)  
Spread cm<sup>3</sup> : 0.3  
100 s : (0.6)

2nd speed rpm : 350.0  
Rack travel in mm : 6.7...6.9  
Del. quantity cm<sup>3</sup>/ : 2.35...2.75  
100 s : (2.15...2.95)  
Spread cm<sup>3</sup> : 0.3  
100 s : (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Aneroid pressure h: 900  
Del. quantity : 142.5...144.5  
1000 : (140.5...146.5)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 50...58

Setting point:  
Speed rpm : 800  
Rack travel in mm : 0.6

Testing:  
1st rack travel in: 13.1  
Speed rpm : 1115...1125  
2nd rack travel in: 4.00  
Speed rpm : 1255...1285  
4th rack travel in: 14.00  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 29...37  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.3

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 6.20...6.40

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 4.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 14.0...14.1

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.7...10.9  
2nd pressure hPa : 215  
Rack travel in m: 11.6...11.8  
3rd pressure hPa : 390  
Rack travel in m: 13.0...13.4

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 92.5...93.5  
1000 s: (90.5...98.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.1  
Speed rpm : 1115...1125

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...180.0  
1000 s: (155.0...185.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.70...6.90  
Del.quantity cm<sup>3</sup>/ : 23.5...27.5  
1000 s: (21.5...29.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

:  
Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1

Adjust stop lever to 0.5...1.0 mm before stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
Edition : 28.05.93  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 403 466 137  
  
Injection pump  
Pump designation : PES6MW10G/12GRS1148  
EP type number : 0 413 406 143  
Governor  
Governor design. : RSV400...900MW7A319-24  
Governor no. : 0 420 085 216  
  
Cust. part no. : 3921082

Customer spec. information  
Customer : CDC

Engine : 6 CTA  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 047  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 1 688 901 017  
  
Opening  
pressure, bar : 207...210  
  
Orifice plate  
diameter mm : 0,6  
  
Test lines : 1 680 750 014  
  
Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.6...3.7  
: (3.55...3.75)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)  
Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900  
  
Rack travel in mm : 13.5...13.6  
  
Del. quantity cm3/ : 18.3...18.5  
100 s: (18.0...18.8)  
  
Spread cm3 : 0.4  
100 s: (0.7)

2nd speed rpm : 400.0  
Rack travel in mm : 5.7...5.9  
Del. quantity cm3/ : 1.6...2.0  
100 s: (1.35...2.25)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 900  
Del. quantity : 183.0...185.0  
1000 : 180.0...188.0  
Spread cm3 : 4.00  
1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 105...113

Setting point:

Speed rpm : 800  
Rack travel in mm : 0.65

Testing:

1st rack travel in: 12.5  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 980...990  
4th rack travel in: 1125  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 75...83  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.8

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.7...5.9

SET IDLE AUXILIARY SPRING

Speed rpm : 400  
Rack travel in mm : 6.2...6.4

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.5  
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...145.0  
1000 s: (122.0...148.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.7...5.9  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

Start-of-delivery mark 13° cam angle  
after start of delivery cyl. 1.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
Edition : 31.03.94  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 466 145  
Injection pump  
Pump designation : PES6MW100/120RS1137-  
2  
EP type number : 0 413 406 180  
Governor  
Governor design. : RSV550...1100MW2A319  
-28  
Governor no. : 0 420 085 225  
Cust. part no. : 3925549  
Customer-spec. information  
Customer : CDC  
Engine : 6 CTA  
1st version kW : 191.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 047  
Inlet press., bar : 1.50  
Test nozzle holder  
assembly : 1 688 901 101  
Opening  
pressure, bar : 207...210  
Test lines : 1 680 750 014  
Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.5...3.6  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)  
Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  
Rack travel in mm : 14.4...14.5  
Del. quantity cm3/ : 14.95...15.15  
100 s: (14.65...15.45)  
Spread cm3 : 0.4  
100 s: (0.7)  
2nd speed rpm : 550.0  
Rack travel in mm : 5.9...6.1  
Del. quantity cm3/ : 1.75...2.15  
100 s: (1.5...2.4)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Del. quantity : 145.0...147.0  
1000 : (142.0...150.0)  
Spread cm3 : 4.00  
1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 93...101

Setting point:

Speed rpm : 800  
Rack travel in mm : 0.65

Testing:

1st rack travel in: 13.4  
Speed rpm : 1155...1175  
2nd rack travel in: 4.00  
Speed rpm : 1225...1245  
4th rack travel in: 1350  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 71...79  
Setting point w/out bumper spring  
Speed rpm : 550  
Rack travel in mm : 6.0

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 550  
Rack travel in mm : 5.9...6.1

SET IDLE AUXILIARY SPRING

Speed rpm : 550  
Rack travel in mm : 6.9...7.1

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.4  
Speed rpm : 1155...1175

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...140.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 550  
Rack travel in mm : 5.9...6.1  
Del.quantity cm3/ : 17.5...21.5  
1000 s: (15.0...24.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

Start-of-delivery mark 13° cam angle  
after start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
Edition : 01.03.94  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 403 466 147

Injection pump  
Pump designation : PES6MW100/120RS1148  
EP type number : 0 413 406 143  
Governor  
Governor design. : RSV400...900MW4A361  
Governor no. : 0 420 085 242

Cust. part no. : 3924615

Customer-spec. information  
Customer : CDC

Engine : 6 CTA

1st version kW : 208.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness : 6.00X2.00X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.6...3.7  
: (3.55...3.75)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.5...13.6

Del.quantity cm3/ : 18.3...18.5

100 s: (18.0...18.8)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 400.0  
Rack travel in mm : 5.7...5.9  
Del.quantity cm3/ : 1.6...2.0  
100 s: (1.35...2.25)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 900  
Del.quantity : 183.0...185.0  
1000 : 180.0...188.0  
Spread cm3 : 4.00  
1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 105...113

Setting point:  
Speed rpm : 800  
Rack travel in mm : 0.65

Testing:  
1st rack travel in: 12.5  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 980...990  
4th rack travel in: 1125  
Speed rpm : 0.30...1.70

LOW IDLE 1  
Control lever  
position degrees: 75...83  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.8

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.7...5.9

SET IDLE AUXILIARY SPRING  
Speed rpm : 400  
Rack travel in mm : 6.2...6.4

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.5  
Speed rpm : 940...950

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 125.0...145.0  
1000 s: (122.0...148.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.7...5.9  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Start-of-delivery mark 13° cam angle  
after start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,1 D 5  
 Edition : 02.05.94  
 Replaces : 04.91  
 Test oil : ISO-4113  
 Combination no. : 0 403 476 103  
 Injection pump  
 Pump designation : PES6MW100/32ORS1131  
 EP type number : 0 413 406 123  
 Governor  
 Governor design. : RSV350...1200MWA342  
 -6  
 Governor no. : 0 420 085 169  
 Cust. part no. : 0210746502  
 Customer-spec. information  
 Customer : MB  
 Engine : OM 366A  
 1st version kW : 92  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 419 992 198  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 101  
 Opening  
 pressure, bar : 207...210  
 Test lines : 1 680 750 089  
 Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.7...3.8  
 : (3.65...3.85)  
 Rack travel in mm : 9.0...12.0  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200  
 Rack travel in mm : 10.1...10.2  
 Del.quantity cm3/ : 6.5...6.7  
 100 s: (6.3...6.9)  
 Spread cm3 : 0.3  
 100 s: (0.6)  
 2nd speed rpm : 350.0  
 Rack travel in mm : 6.2...6.9  
 Del.quantity cm3/ : 0.9...1.3  
 100 s: (0.65...15.5)  
 Spread cm3 : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
 Click setting x : 5.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Aneroid pressure h: 750  
 Del.quantity : 65.0...67.0  
 1000 : (63.0...69.0)  
 Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 94...102

Setting point:  
 Speed rpm : 800  
 Rack travel in mm : 0.65

#### Testing:

1st rack travel in: 9.1  
Speed rpm : 1235...1240  
2nd rack travel in: 4.00  
Speed rpm : 1274...1279  
3rd rack travel in: 4.00  
Speed rpm : 1300...1330  
4th rack travel in: 1450  
Speed rpm : 0.30...1.70  
5th rack travel in: 1245...1265  
Speed rpm : 9.10

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.55  
Speed rpm : 350  
Rack travel in mm : 6.2...6.9  
Rack travel in mm : 2.00  
Speed rpm : 440...500

#### SET IDLE AUXILIARY SPRING

Speed rpm : 350  
Rack travel in mm : 6.55

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200  
Rack travel in m: 10.1...10.2  
2nd speed rpm : 600  
Rack travel in m: 10.8...11.0  
3rd speed rpm : 1000  
Rack travel in m: 10.4...10.6

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 750  
Rack travel mm : 10.9...11.0

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.6...9.7  
2nd pressure hPa : 180  
Rack travel in m: 9.8...10.0  
3rd pressure hPa : 350  
Rack travel in m: 10.5...10.7

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 750

Speed rpm : 600  
Del.quantity cm3/ : 58.0...61.0  
1000 s: (55.5...63.5)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 45.0...47.0  
1000 s: (43.0...49.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.1  
Speed rpm : 1235...1240

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 83.0...93.0  
1000 s: (80.0...96.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.2...6.9  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

#### Remarks:

:

Test hydr. locking device for starting  
with 500...1000 hPa air pressure.

Set pneumatic shutoff device to  
control-rod stop = 0.5...1.5 mm  
control-rod travel at 4.5 bar  
atmospheric pressure.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,1 D 6  
 Edition : 02.05.94  
 Replaces : 07.91  
 Test oil : ISO-4113  
 Combination no. : 0 403 476 104  
 Injection pump  
 Pump designation : PES6MW100/32ORS1131  
 EP type number : 0 413 406 123  
 Governor  
 Governor design. : RSV350...1200MWA342  
 -7  
 Governor no. : 0 420 085 170

Cust. part no. : 0210746602

Customer-spec. information  
 Customer : MB

Engine : OM 366A

1st version kw : 100  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.7...3.8  
 : (3.65...3.85)  
 Rack travel in mm : 9.0...12.0  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.5...10.6

Del. quantity cm3/ : 7.4...7.6

100 s: (7.2...7.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.8...6.5

Del. quantity cm3/ : 0.9...1.3

100 s: (0.65...15.5)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 750

Del. quantity : 74.0...76.0

1000 : (72.0...78.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 96...104

Setting point:

Speed rpm : 800

Rack travel in mm : 0.65

#### Testing:

1st rack travel in: 10.5  
Speed rpm : 1240...1245  
2nd rack travel in: 4.00  
Speed rpm : 1284...1289  
3rd rack travel in: 4.00  
Speed rpm : 1300...1330  
4th rack travel in: 1450  
Speed rpm : 0.30...1.70  
5th rack travel in: 1240...1256  
Speed rpm : 9.5

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.15  
Speed rpm : 350  
Rack travel in mm : 5.8...6.5  
Rack travel in mm : 2.00  
Speed rpm : 450...530

#### SET IDLE AUXILIARY SPRING

Speed rpm : 350  
Rack travel in mm : 6.15

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200  
Rack travel in m: 10.5...10.6  
2nd speed rpm : 600  
Rack travel in m: 11.3...11.4  
3rd speed rpm : 1000  
Rack travel in m: 10.9...11.1

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 750  
Rack travel mm : 11.3...11.4

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.6...9.7  
2nd pressure hPa : 150  
Rack travel in m: 9.9...10.1  
3rd pressure hPa : 300  
Rack travel in m: 10.9...11.1

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 750

Speed rpm : 600  
Del.quantity cm3/ : 67.5...70.5  
1000 s: (65.0...73.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 45.0...47.0  
1000 s: (43.0...49.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.5  
Speed rpm : 1240...1245

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 83.0...93.0  
1000 s: (80.0...96.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.8...6.5  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Test hydr. locking device for starting  
with 500...1000 hPa air pressure.

Set pneumatic shutoff device to  
control-rod stop = 0.5...1.5 mm  
control-rod travel at 4.5 bar  
atmospheric pressure.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,1 D 7  
 Edition : 02.05.94  
 Replaces : 07.91  
 Test oil : ISO-4113

Combination no. : 0 403 476 105

Injection pump  
 Pump designation : PES6MW100/32ORS1131  
 EP type number : 0 413 406 123  
 Governor  
 Governor design. : RSV350...1200MWA342  
 -8  
 Governor no. : 0 420 085 171

Cust. part no. : 0210746702

Customer-spec. information  
 Customer : MB

Engine : OM 366A

1st version kW : 114  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.7...3.8  
 : (3.65...3.85)  
 Rack travel in mm : 9.0...12.0  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

---

Rack travel in mm : 10.9...11.0

---

Del.quantity cm3/ : 8.3...8.5

---

100 s: (8.1...8.7)

---

Spread cm3 : 0.3

---

100 s: (0.6)

---

2nd speed rpm : 350.0  
 Rack travel in mm : 5.8...6.5  
 Del.quantity cm3/ : 0.9...1.3  
 100 s: (0.65...15.5)  
 Spread cm3 : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
 Click setting x : 5.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Aneroid pressure h: 750  
 Del.quantity : 83.0...85.0  
 1000 : (81.0...87.0)  
 Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 100...108

Setting point:  
 Speed rpm : 800  
 Rack travel in mm : 0.65

#### Testing:

1st rack travel in: 9.9  
Speed rpm : 1240...1245  
2nd rack travel in: 4.00  
Speed rpm : 1289...1294  
3rd rack travel in: 4.00  
Speed rpm : 1325...1355  
4th rack travel in: 1450  
Speed rpm : 0.30...1.70  
5th rack travel in: 1240...1256  
Speed rpm : 9.9

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.15  
Speed rpm : 350  
Rack travel in mm : 5.8...6.5  
Rack travel in mm : 2.00  
Speed rpm : 420...500

#### SET IDLE AUXILIARY SPRING

Speed rpm : 350  
Rack travel in mm : 6.15

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200  
Rack travel in m: 10.9...11.0  
2nd speed rpm : 600  
Rack travel in m: 11.7...11.8  
3rd speed rpm : 1000  
Rack travel in m: 11.0...11.2

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 750  
Rack travel mm : 11.7...11.8

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.6...9.7  
2nd pressure hPa : 300  
Rack travel in m: 10.7...10.9  
3rd pressure hPa : 400  
Rack travel in m: 11.3...11.5

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 750

L28

Speed rpm : 600  
Del.quantity cm3/ : 78.0...81.0  
1000 s: (75.5...83.5)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 45.0...47.0  
1000 s: (43.0...49.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.9  
Speed rpm : 1240...1245

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 83.0...93.0  
1000 s: (80.0...96.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.8...6.5  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

#### Remarks:

:

Test hydr. locking device for starting  
with 500...1000 hPa air pressure.

Set pneumatic shutoff device to  
control-rod stop = 0.5...1.5 mm  
control-rod travel at 4.5 bar  
atmospheric pressure.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN  
Edition : 12.04.94  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 486 109  
Injection pump  
Pump designation : PES6MW100/321RS1208  
EP type number : 0 413 406 199  
Governor  
Governor design. : RSV350...1000MW1A360  
-2  
Governor no. : 0 420 085 240  
Cust. part no. : 3-7312  
Customer-spec. information  
Customer : MAN  
Engine : D 0826 LE103  
1st version kW : 161.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 047  
Inlet press., bar : 1.50  
Test nozzle holder  
assembly : 0 681 343 009  
Opening  
pressure, bar : 172...175  
Test lines : 1 680 750 008  
Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.5...3.6  
: (3.3.45...3.65)  
Rack travel in mm : 9.0...12.0  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 970  
Rack travel in mm : 14.85...14.95  
Del. quantity cm3/ : 15.0...15.2  
100 s: (14.7...15.5)  
Spread cm3 : 0.4  
100 s: (0.7)  
2nd speed rpm : 350.0  
Rack travel in mm : 4.3...4.7  
Del. quantity cm3/ : 1.1...1.5  
100 s: (0.85...1.75)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.3...1.0

Governor spring pre-tension  
Click setting x : 3.20

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 970  
Del. quantity : 150.0...152.0  
1000 : (147.0...155.0)  
Spread cm3 : 4.00  
1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 87...95

Setting point:  
Speed rpm : 800

Rack travel in mm : 0.65

Testing:

1st rack travel in: 13.9  
Speed rpm : 1020...1030

2nd rack travel in: 4.00  
Speed rpm : 1180...1190

3rd rack travel in: 4.0  
Speed rpm : 1085...1115

4th rack travel in: 1150  
Speed rpm : 0.3...1.7

LOW IDLE 1

Control lever

position degrees: 64...72

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 4.5

Testing:

Speed rpm : 100

Minimum rack travel: 19.0

Speed rpm : 350

Rack travel in mm : 4.3...4.7

SET IDLE AUXILIARY SPRING

Speed rpm : 350

Rack travel in mm : 4.8...5.2

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 970

Rack travel in m: 14.85...14.95

2nd speed rpm : 500

Rack travel in m: 14.8...15.0

3rd speed rpm : 700

Rack travel in m: 14.8...15.0

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm3/ : 148.0...152.0  
1000 s: (145.0...155.0)

Spread cm3 : 6.00  
1000 s: (9.0)

Speed rpm : 700

Del.quantity cm3/ : 156.0...160.0  
1000 s: (153.0...163.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.9

Speed rpm : 14.85...14.95

MD2

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 140.0...160.0  
1000 s: (137.0...163.0)

LOW IDLE

Speed rpm : 350

Rack travel in mm : 4.3...4.7

Del.quantity cm3/ : 11.0...15.0  
1000 s: (8.5...17.5)

Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 h 2  
 Edition : 30.04.92  
 Replaces : 09.88  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 066  
 Injection pump  
 Pump designation : PES6A100D41ORS2676  
 EP type number : 9 410 230 023  
 Governor  
 Governor design. : RSV425...1100A2C2161  
 -1L  
 Governor no. : 9 420 234 133

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466T

1st version kW : 120.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 32...34

Prestroke mm : 2.45...2.55  
 : (2.40...2.60)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.40...9.50

Del.quantity cm3/ : 9.9...10.1

100 s: (9.7...10.3)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/ : 2.1...2.5

100 s: (1.8...2.7)

Spread cm3 : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 500

Del.quantity : 99.0...101.0

1000 : (97.0...103.0)

Spread cm3 : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 46...54

Testing:

1st rack travel in: 8.40

Speed rpm : 1145...1155

2nd rack travel in: 4.00  
Speed rpm : 1205...1215  
3rd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control Lever  
position degrees: 24...32  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 4.9

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.30...5.50

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 9.40...9.40  
2nd speed rpm : 750  
Rack travel in m: 10.60...10.80

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 173  
Rack travel mm : 10.30...10.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.10...9.30  
2nd pressure hPa : 80  
Rack travel in m: 9.40...9.80  
3rd pressure hPa : 500  
Rack travel in m: 10.60...10.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 500  
Speed rpm : 750  
Del.quantity cm3/ : 116.0...119.0  
1000 s: (114.0...121.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : -  
1000 s: (84.0...92.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.40  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (185.0...215.0)  
Rack travel in mm : 19.40...19.40

#### HIGH IDLE

1st version  
Speed rpm : 1195  
Rack travel in mm : 4.70...4.90

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.30...5.50  
Del.quantity cm3/ : 21.0...25.0  
1000 s: (18.5...27.5)  
Spread cm3 : 6.00  
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE23746

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark = 15.5° after  
start of delivery cyl. 1.

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 h 3  
Edition : 20.6.88  
Replaces : 7.86  
Test oil : ISO-4113  
Combination no. : 9 400 230 068  
Injection pump  
Pump designation : PES6A1000410RS2676-1  
Governor  
Governor design. : RSV450...1000A1B2186  
-L

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466 A

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 413 009

Opening  
pressure, bar : 172...175

Test lines : 9 631 230 706

Outside diameter  
x Wall thickness  
x Length mm : 6,00X2,00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.45...2.55  
: (2.40...2.60)  
Rack travel in mm : 10.50  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0-60-120-180-240-300  
: 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000  
Rack travel in mm : 9.90...10.00  
Del. quantity cm3/ : 10.50...10.70  
Spread cm3 : 0.35  
100 s: (0.60)

2nd speed rpm : 450  
Rack travel in mm : 5.20...5.40  
Del. quantity cm3/ : 1.80...2.20  
Spread cm3 : 0.35  
100 s: (0.60)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: LOSE  
Speed rpm : 800  
Rack travel in mm : 0.30...1.000

Governor spring pre-tension  
Click setting x : -

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Del. quantity : 105.00...107.00  
1000 : (103.0...109.0)

## RATED SPEED

1st version  
Control lever  
position degrees: 48...56

Testing:  
1st rack travel in: 8.90  
Speed rpm : 1045...1055  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1150  
Speed rpm : 0.30...1.40

## LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 4.80

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 450  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000  
Rack travel in m: 9.90...20.00  
2nd speed rpm : 700  
Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700  
Del.quantity cm3/ : 109.50...112.50  
1000 s: (107.0...115.0)

Remarks:

Start-of-delivery mark at 14° angular  
displacement of the cam after start of  
delivery of cylinder 1



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 h 4  
Edition : 20.6.88  
Replaces : 7.86  
Test oil : ISO-4113  
  
Combination no. : 9 400 230 068  
  
Injection pump  
Pump designation : PES6A100D41GRS2676-1  
Governor  
Governor design. : RSV450...1000A1C2186  
-L

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466 A

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter  
x Wall thickness  
x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.45...2.55  
: (2.40...2.60)  
Rack travel in mm : 10.50  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0-60-120-180-240-300  
: 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000  
Rack travel in mm : 9.90...10.00  
Del.quantity cm3/ : 10.50...10.70  
Spread cm3 : 0.35  
100 s : (0.60)

2nd speed rpm : 450  
Rack travel in mm : 5.20...5.40  
Del.quantity cm3/ : 1.80...2.20  
Spread cm3 : 0.35  
100 s : (0.60)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: LOSE  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : -

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Del.quantity : 105.00...107.00  
1000 : (103.0...109.0)

## RATED SPEED

1st version  
Control lever  
position degrees: 48...56

Testing:  
1st rack travel in: 8.90  
Speed rpm : 1045...1055  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1150  
Speed rpm : 0.30...1.40

## LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 4.80

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 450  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000  
Rack travel in m: 9.90...20.00  
2nd speed rpm : 700  
Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 109.50...112.50  
1000 s: (107.0...115.0)

Remarks:

Start-of-delivery mark at 14° angular  
displacement of the cam after start of  
delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a 2  
Edition : 14.6.88  
Replaces : 4.3.87  
Test oil : ISO-4113

Combination no. : 9 400 230 098

Injection pump  
Pump designation : PES6A1000320/3RS2691  
Governor  
Governor design. : RSV425...1100A2C2190  
-9R

Customer spec. information  
Customer : CUMMINS

Engine : 6CTA 8,3

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 1 688 901 016

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0.5

Test Lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13,00...13,10

Del. quantity cm3/ : 11.4...11.6

100 s : (11.1...11.8)

Spread cm3 : 0.35

100 s : (0.6)

2nd speed rpm : 425  
Rack travel in mm : 5,80...6,00  
Del. quantity cm3/ : 1.30...1.70

100 s : (-)

Spread cm3 : 0.35  
100 s : (0.55)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Del. quantity : 113.5...115.5  
1000 : (111.5...117.5)

## RATED SPEED

1st version  
Control lever  
position degrees: 38...46

Testing:  
1st rack travel in: 12.00  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
3rd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

## LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 425

Rack travel in mm : 5.40

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 470...530

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0  
1000 s: ( 130.0)  
Rack travel in mm : 21,00

LOW IDLE

Speed rpm : 425  
Del.quantity cm3/ : 13.0...17.0  
1000 s: (10.5...19.5)

Remarks:

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 b 3  
Edition : 22.11.91  
Replaces : 18.9.91  
Test oil : ISO-4113

Combination no. : 9 400 230 107

Injection pump  
Pump designation : PES6A1000320/3RS2691  
-2  
EP type number : 9 410 230 028  
Governor  
Governor design. : RGV350...1200AB1233R  
Governor no. : 9 420 231 018

Customer-spec. information  
Customer : C.D.C

Engine : 60T830

1st version kW : 157.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

M11

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 11.2...11.4

100 s: (11.0...11.6)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 4.6...4.8

Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.6

100 s: (0.8)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.00...0.20

2nd speed rpm : 350

travel mm : 1.00...1.50

3rd speed rpm : 450

travel mm : 1.90...2.40

4th speed rpm : 1200

travel mm : 6.90...6.90

5th speed rpm : 1350

travel mm : 8.15...8.65

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1435

Rack travel in mm : 6.70...9.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700  
Del.quantity : 112.5...114.5  
1000 : (110.5...116.5)  
Spread cm3 : 4.00  
1000 : (6.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 40...46

Testing:  
1st rack travel in: 9.80  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1315...1345  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...15  
Speed rpm : 350  
Rack travel in mm : 4.60...4.80

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 10.80...10.90

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 260  
Rack travel in m: 9.90...10.00  
3rd pressure hPa : 345  
Rack travel in m: 10.30...10.70

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 85.5...89.5  
1000 s: (83.5...91.5)  
Aneroid pressure h: -

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (145.0...175.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.60...4.80  
Del.quantity cm3/ : 17.0...21.0  
1000 s: (14.5...23.5)  
Spread cm3 : 6.00  
1000 s: (8.00)

Remarks:

: C.D.C. # 3908558

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm  
before stop.

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : ONA 3,4 A  
Edition : 28.04.94  
replaces : 08.04.91  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/10F1800R209  
Type number : 0 460 406 048  
Customer Part-No. :

Customer-specific information  
Customer : ONAN

Engine : L634T

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0,2  
(from BDC): +0,02(0,04)

Start of delivery block  
Piston stroke mm: 0.98  
mm: +0.04(0.06)

Outlet : A

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel

Speed 1/min: 1400  
Charge press. hPa: 800  
Setting value mm: 3.90...4.30

Shutoff  
electromagnet Volt: 12

## Supply-pump pressure

Speed 1/min: 1400  
Charge press hPa: 800  
Setting value bar: 4.80...5.40  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1400  
Charge press. hPa: 800  
Del. quantity cm3/  
1000S.: 58.50...59.50

Shutoff  
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 700  
Del. quantity cm3/  
1000S.: 44.00...45.00

Shutoff  
electromagnet Volt: 12

## Low-idle speed regulation

Speed 1/min: 400  
Del. quantity cm3/  
1000S.: 14.00...18.00

Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 3.0  
1000S.: (3.0)

## Full-load speed regulation

Speed 1/min: 1900  
Charge press hPa: 800  
Del. quantity cm3/  
1000S.: 37.00...43.00

Shutoff  
electromagnet Volt: 12

## Start:

Speed 1/min: 100  
Del. quantity cm3/: 42.00...92.00  
mind 1000S.: 42.00

Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1400  
Charge press hPa: 800

Inj.-qty. cm3/  
 difference 1000S.: 9.50...17.50 \*  
 Shutoff  
 electromagnet Volt: 12  
 TD-travel dif.measurement  
 correttore anticipo iniezione (SV)  
 1.Speed 1/min: 1400  
 Charge press hPa: 800  
 TD-travel  
 difference mm: 0.50...0.70 \*  
 Shutoff  
 electromagnet Volt: 12

Inspection-pump test specifications  
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1800  
 Charge press hPa: 800  
 TD travel mm: 5.40...6.20  
 mm: (5.10...6.50)

Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1400  
 Charge press hPa: 800  
 TD travel mm: 3.90...4.30  
 mm: (3.40...4.80)

Shutoff  
 electromagnet Volt: 12  
 4th speed 1/min: 800  
 Charge press hPa: 800  
 TD travel mm: 1.00...1.80  
 mm: (0.70...2.10)

Shutoff  
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800  
 Charge press. hPa: 800  
 Supply-pump  
 pressure bar: 2.70...3.30

Shutoff  
 electromagnet Volt: 12  
 2nd speed 1/min: 1400  
 Charge press. hPa: 800  
 Supply-pump  
 pressure bar: 4.80...5.40

Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1800  
 Charge press. hPa: 800  
 Supply-pump  
 pressure bar: 6.00...6.60

Shutoff  
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 700  
 Charge press. hPa: 800  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 41.70...83.40  
 quantity cm3/10s: (26.70...98.40)  
 2nd speed 1/min: 1800  
 Charge press. hPa: 800  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 55.60...139.00  
 quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700  
 Charge-air pressure-setting  
 point hPa: 300  
 LDA-stroke mm: 6,5  
 Shutoff

electromagnet Volt: 12  
 Del. quantity cm3/: 50.50...51.50  
 1000S.: (48.70...53.30)

2nd speed 1/min: 2000  
 Charge press. hPa: 800  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 5,50...14,50  
 1000S.: -

3rd speed 1/min: 2050  
 Charge press. hPa: 800  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 0.00...3.00  
 1000S.: -

5th speed 1/min: 1900  
 Charge press. hPa: 800  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 37.00...43.00  
 1000S.: (36.00...44.00)

8th speed 1/min: 1950  
 Charge press. hPa: 800  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 23.00...31.00  
 1000S.: (22.00...32.00)

9th speed 1/min: 1800  
 Charge press. hPa: 800  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 51.50...54.50  
 1000S.: (51.20...55.80)

12th speed 1/min: 1400  
 Charge press. hPa: 800  
 Shutoff  
 electromagnet Volt: 12  
 Del. quyntity cm3/: 58.50...59.50  
 1000S.: (56.70...61.30)



18th speed 1/min: 700  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 44.00...45.00  
1000S.: (42.20...46.80)

20th speed 1/min: 700  
Charge press. hPa: 800  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 58.00...61.00  
1000S.: -

Mech. shutoff:  
Mech. Abststellung:

1st speed 1/min: 1800  
Del. quantity cm3/: 0.00...3.00  
1000S.: -

Shutoff  
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 350  
Del. quantity cm3/: 0.00...3.00  
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 14.00...18.00  
1000S.: (12.00...20.00)  
Dispersion cm3/: 3.0  
1000S.: (3.0)

2nd speed 1/min: 450  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 0.00...6.00  
1000S.: (0.00...6.00)  
3rd speed 1/min: 350  
Del. quantity cm3/: 26.50...33.50  
1000S.: (26.00...34.00)

Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1400  
Charge press. hPa: 800  
Inj.-qty. cm3/ : 5.00...7.00 "  
difference 1000S.: -  
Shutoff  
electromagnet Volt: 12

SP press.-dif.measurement:  
pompa di mandata (FP):

M15

1st speed 1/min: 1400  
Charge press. hPa: 800  
Supply pump-  
pressure : 0.10...0.30 "  
difference bar: -  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 220  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 42.00...92.00  
1000S.: (42.00...92.00)

2nd speed 1/min: 300  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 18.00...42.00  
1000S.: (18.00...42.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 42.00...92.00  
1000S.: (42.00...92.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
K mm: -  
KF mm: 5,6...6,0  
MS mm: 0,6...1,0  
SVS max. mm: 1,7  
LDA stroke mm: 6,5  
XK mm: 20,0...22,0  
XL mm: 10,1...13,5

Remarks:

Operate control lever after each  
manifold-pressure compensator pressure  
change.

\* Correction at adjusting nut

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA 3,4 B  
Edition : 28.04.94  
replaces : 18.02.91  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/10F1400R209-1  
Type number : 0 460 406 052  
Customer Part-No. :

Customer-specific information  
Customer : ONAN

Engine : L634T-Auto

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0,2  
(from 8DC):  $\pm 0,02(0,04)$

Start of delivery block  
Piston stroke mm: 1.0  
mm:  $\pm 0.04(0.06)$

Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400  
Charge press. hPa: 800  
Setting value mm: 4.30...4.70

Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100  
Charge press hPa: 800  
Setting value bar: 3.80...4.40  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1100  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/  
1000S.: 61.00...62.00

Shutoff  
electromagnet Volt: 12  
Dispersion cm<sup>3</sup>/: 3.0  
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700  
Del. quantity cm<sup>3</sup>/  
1000S.: 44.50...45.50

Shutoff  
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 400  
Del. quantity cm<sup>3</sup>/  
1000S.: 14.00...18.00

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 3.0  
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 1480  
Charge press hPa: 800  
Del. quantity cm<sup>3</sup>/  
1000S.: 42.00...46.00

Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 42.00...92.00  
mind 1000S.: 42.00

Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1100  
 Charge press hPa: 800  
 Inj.-qty. cm<sup>3</sup>/  
 difference 1000S.: 8.50...16.50 \*  
 Shutoff  
 electromagnet Volt: 12  
 TD-travel dif.measurement  
 correttore anticipo iniezione (SV)  
 1.Speed 1/min: 1100  
 Charge press hPa: 800  
 TD-travel  
 difference mm: 0.50...0.70 \*  
 Shutoff  
 electromagnet Volt: 12

Inspection-pump test specifications  
 Test specifications in parentheses

Timing-device characteristic:

3rd speed 1/min: 1400  
 Charge press hPa: 800  
 TD travel mm: 4.30...4.70  
 mm: (3.80...5.20)

Shutoff  
 electromagnet Volt: 12  
 4th speed 1/min: 800  
 Charge press hPa: 800  
 TD travel mm: 1.40...2.20  
 mm: (1.10...2.50)

Shutoff  
 electromagnet Volt: 12  
 5th speed 1/min: 1100  
 Charge press. hPa: 800  
 TD travel mm: 2.70...3.30  
 mm: (2.30...3.70)

Shutoff  
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 700  
 Charge press. hPa: 800  
 Supply-pump  
 pressure bar: 2.30...2.90  
 Shutoff

electromagnet Volt: 12  
 2nd speed 1/min: 1100  
 Charge press. hPa: 800  
 Supply-pump  
 pressure bar: 3.80...4.40  
 Shutoff

electromagnet Volt: 12  
 3rd speed 1/min: 1400  
 Charge press. hPa: 800  
 Supply-pump  
 pressure bar: 4.80...5.40  
 Shutoff  
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 700  
 Charge press. hPa: 800  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 41.70...83.40  
 quantity cm<sup>3</sup>/10s: (26.70...98.40)  
 2nd speed 1/min: 1400  
 Charge press. hPa: 800  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 55.60...139.00  
 quantity cm<sup>3</sup>/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700  
 Charge-air pressure-setting  
 point hPa: 200  
 LDA-stroke mm: 6,5  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 47.00...48.00  
 1000S.: (45.20...49.80)

2nd speed 1/min: 1560  
 Charge press. hPa: 800  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 14.00...22.00  
 1000S.: -

3rd speed 1/min: 1600  
 Charge press. hPa: 800  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 0,00...3.00  
 1000S.: -

5th speed 1/min: 1480  
 Charge press. hPa: 800  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 42.00...46.00  
 1000S.: (40.00...48.00)

9th speed 1/min: 1400  
 Charge press. hPa: 800  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 56.50...59.50  
 1000S.: (55.70...60.30)

12th speed 1/min: 1100  
 Charge press. hPa: 800  
 Shutoff  
 electromagnet Volt: 12  
 Del. quyntity cm<sup>3</sup>/: 61.00...62.00  
 1000S.: (59,20...63.80)

18th speed 1/min: 700  
 Charge press. hPa: -  
 Shutoff  
 electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 44.50...45.50  
1000S.: (42.70...47.30)  
20th speed 1/min: 700  
Charge press. hPa: 800  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 57.50...60,50  
1000S.: -

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 1400  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 350  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 14.00...18.00  
1000S.: (12.00...20.00)

Dispersion cm<sup>3</sup>/: 3.0  
1000S.: (3.0)

2nd speed 1/min: 450  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...6.00  
1000S.: (0.00...6.00)

3rd speed 1/min: 350  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 26.50...33.50  
1000S.: -

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1100  
Charge press. hPa: 800  
Inj.-qty. cm<sup>3</sup>/ : 5.00...7.00 "  
difference 1000S.: -  
Shutoff  
electromagnet Volt: 12

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1100

M18

Charge press. hPa: 800  
Supply pump-  
pressure : 0.10...0.30 "  
difference bar: -  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 220  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 42.00...92.00  
1000S.: -

2nd speed 1/min: 300  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 18.00...42.00  
1000S.: -

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 42.00...92.00  
1000S.: -

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: -  
KF mm: 5.6...6,0  
MS mm: 0,6...1,0  
SVS max. mm: 1,7  
LDA stroke mm: 6,5  
XK mm: 20,0...22,0  
XL mm: 8,9...12,3

Remarks:

:  
:  
Operate control lever after each  
manifold-pressure compensator pressure  
change.

\* Correction at adjusting nut

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : ONA 3,4 E  
Edition : 28.04.94  
replaces : 18.02.91  
Calibrating oil : ISO-4113

Injection pump : VE6/10F1800R209-5  
Type number : 0 460 406 065  
Customer Part-No. :

Customer-specific information  
Customer : ONAN

Engine : L634T

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0,2  
(from BDC): +0,02(0,04)

Start of delivery block  
Piston stroke mm: 0.98  
mm: +0.04(0.06)

Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400  
Charge press. hPa: 800  
Setting value mm: 3.90...4.30

M19

Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1400  
Charge press hPa: 800  
Setting value bar: 4.80...5.40  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1400  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/  
1000S.: 58.50...59.50

Shutoff  
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 700  
Del. quantity cm<sup>3</sup>/  
1000S.: 44.00...45.00

Shutoff  
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 400  
Del. quantity cm<sup>3</sup>/  
1000S.: 14.00...18.00

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 3.0  
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 1900  
Charge press hPa: 800  
Del. quantity cm<sup>3</sup>/  
1000S.: 37.00...43.00

Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 42.00...92.00  
mind 1000S.: 42.00

Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1400  
Charge press hPa: 800

Inj.-qty. cm<sup>3</sup>/  
 difference 1000S.: 9.50...17.50 \*  
 Shutoff  
 electromagnet Volt: 12  
 TD-travel dif.measurement  
 correttore anticipo iniezione (SV)  
 1.Speed 1/min: 1400  
 Charge press hPa: 800  
 TD-travel  
 difference mm: 0.50...0.70 \*  
 Shutoff  
 electromagnet Volt: 12

Inspection-pump test specifications  
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1800  
 Charge press hPa: 800  
 TD travel mm: 5.40...6.20  
 mm: (5.10...6.50)

Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1400  
 Charge press hPa: 800  
 TD travel mm: 3.90...4.30  
 mm: (3.40...4.80)

Shutoff  
 electromagnet Volt: 12  
 4th speed 1/min: 800  
 Charge press hPa: 800  
 TD travel mm: 1.00...1.80  
 mm: (0.70...2.10)

Shutoff  
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800  
 Charge press. hPa: 800  
 Supply-pump  
 pressure bar: 2.70...3.30  
 bar: -

Shutoff  
 electromagnet Volt: 12  
 2nd speed 1/min: 1400  
 Charge press. hPa: 800  
 Supply-pump  
 pressure bar: 4.80...5.40  
 bar: -

Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1800  
 Charge press. hPa: 800  
 Supply-pump  
 pressure bar: 6.00...6.60  
 bar: -

Shutoff  
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 700  
 Charge press. hPa: 800  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 41.70...83.40  
 quantity cm<sup>3</sup>/10s: (26.70...98.40)  
 2nd speed 1/min: 1800  
 Charge press. hPa: 800  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 55.60...139.00  
 quantity cm<sup>3</sup>/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700  
 Charge-air pressure-setting  
 point hPa: 300  
 LDA-stroke mm: 6.2  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>: 50.50...51.50  
 1000S.: (48.70...53.30)

2nd speed 1/min: 2000  
 Charge press. hPa: 800  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>: 5,50...14,50  
 1000S.: -

3rd speed 1/min: 2050  
 Charge press. hPa: 800  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>: 0.00...3.00  
 1000S.: -

5th speed 1/min: 1900  
 Charge press. hPa: 800  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>: 37.00...43.00  
 1000S.: (36.00...44.00)

8th speed 1/min: 1950  
 Charge press. hPa: 800  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>: 23.00...31.00  
 1000S.: (22.00...32.00)

9th speed 1/min: 1800  
 Charge press. hPa: 800  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>: 51.50...54.50  
 1000S.: (50.70...55.30)

12th speed 1/min: 1400  
 Charge press. hPa: 800

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 58.50...59.50  
1000S.: (56,70...61.30)  
18th speed 1/min: 700  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 44.00...45.00  
1000S.: (42.20...46.80)  
20th speed 1/min: 700  
Charge press. hPa: 800  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 57.50...60,50  
1000S.: -

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 1800  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 350  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 14.00...18.00  
1000S.: (12.00...20.00)

Dispersion cm<sup>3</sup>/: 3.0  
1000S.: (3.0)

2nd speed 1/min: 450

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...6.00  
1000S.: -

3rd speed 1/min: 350  
Del. quantity cm<sup>3</sup>/: 26.50...33.50  
1000S.: (26.00...34.00)

Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1400  
Charge press. hPa: 800  
Inj.-qty. cm<sup>3</sup>/ : 5.00...7.00 "  
difference 1000S.: -

Shutoff  
electromagnet Volt: 12

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1400  
Charge press. hPa: 800  
Supply pump-  
pressure : 0.10...0.30 "  
difference bar: -  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 220  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 42.00...92.00  
1000S.: -

2nd speed 1/min: 300  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 18.00...42.00  
1000S.: -

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 42.00...92.00  
1000S.: -

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: -  
KF mm: 5,6...6,0  
MS mm: 0,6...1,0  
SVS max. mm: 1,7  
LDA stroke mm: 6.2

Remarks:

:  
Operate control lever after each  
manifold-pressure compensator pressure  
change.

\* Correction at adjusting nut

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : STE 4,0 H  
Edition : 03.05.94  
replaces : 18.02.91  
Calibrating oil : ISO-4113

Injection pump : VE4/11F1100R94-1  
Type number : 0 460 414 011  
Customer Part-No. :

Customer-specific information  
Customer : STEYR

Engine : WD411.89/90

Power KW: 52  
Speed 1/min: 1100

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
Setting value mm: 5.20...5.60

Supply-pump pressure

Speed 1/min: 1000  
Setting value bar: 5.20...5.80

Full-load del. w/out charge press.:

Speed 1/min: 1000  
Del. quantity cm3/  
1000S.: 73.5...74.5  
Dispersion cm3/: 3.5  
1000S.: (3.5)

Low-idle speed regulation

Speed 1/min: 300  
Del. quantity cm3/  
1000S.: 11.50...15.50  
Del. quantity cm3/: 3.5  
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1150  
Del. quantity cm3/  
1000S.: 50.00...56.00

Start:

Speed 1/min: 100  
Del. quantity cm3/: 70.00...120.00  
mind 1000S.: 70.00

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100  
TD travel mm: 5.90...6.70  
mm: (5.60...7.00)  
3rd speed 1/min: 1000  
TD travel mm: 5.20...5.60  
mm: (4.70...6.10)  
4th speed 1/min: 500  
TD travel mm: 0.90...1.50  
mm: (0.50...1.90)

Supply-pump pressure characteristic:

1st speed 1/min: 1100  
Supply-pump  
pressure bar: 5.70...6.30  
2nd speed 1/min: 1000  
Supply-pump  
pressure bar: 5.20...5.80  
3rd speed 1/min: 500  
Supply-pump  
pressure bar: 2.80...3.40

Overflow quantity at overflow valve:



1st speed 1/min: 500  
Overflow : 41.70...83.40  
quantity cm3/10s: (26.70...98.40)  
2nd speed 1/min: 1080  
Overflow : 55.60...139.00  
quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1270  
Del. quantity cm3/: 0.00...3.00  
1000S.: (0.00...3.00)  
4th speed 1/min: 1170  
Del. quantity cm3/: 10.00...56.00  
1000S.: (10.00...56.00)  
5th speed 1/min: 1150  
Del. quantity cm3/: 50.00...56.00  
1000S.: (47.00...59.00)  
9th speed 1/min: 1080  
Del. quantity cm3/: 72.00...75.00  
1000S.: (71.00...76.00)  
12th speed 1/min: 1000  
Del. quantity cm3/: 73.50...74.50  
1000S.: (71.70...76.30)  
20th speed 1/min: 500  
Del. quantity cm3/: 70.00...73.00  
1000S.: (68.50...74.50)

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 1080  
Del. quantity cm3/: 0.00...3.00  
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 300  
Del. quantity cm3/: 11.50...15.50  
1000S.: (9.50...17.50)  
Dispersion cm3/: 3.5  
1000S.: (3.5)  
2nd speed 1/min: 340  
Del. quantity cm3/: 2.00...8.00  
1000S.: (1.00...9.00)  
3rd speed 1/min: 400  
Del. quantity cm3/: 0.00...3.00  
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 170  
Del. quantity cm3/: 70.00...120.00  
1000S.: -

2nd speed 1/min: 300  
Del. quantity cm3/: 40.00...70.00  
1000S.: -

4th speed 1/min: 100  
Del. quantity cm3/: 70.00...120.00  
1000S.: -

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 3,2...3,4  
KF mm: 5,1...5,5  
MS mm: 0,8...1,2  
SVS max. mm: 1,9  
Ya mm: 37.2...39.2  
Yb mm: 52.4...57.4

Remarks:

:  
:  
:

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF  
Edition : 28.04.94  
replaces : 03.07.92  
Calibrating oil : ISO-4113

Injection pump : VE4/11F1900R350  
Type number : 0 460 414 070  
Customer Part-No. :

Customer-specific information  
Customer : IVECO-SOFIM

Engine : 8140.27.2780

### TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100  
Charge press. hPa: 1000  
Setting value mm: 2.20...2.60

Shutoff  
electromagnet Volt: 12

Supr'y-pump pressure

Speed 1/min: 1100  
Charge press hPa: 1000  
Setting value bar: 5.60...6.20  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1750  
Charge press. hPa: 1000  
Del. quantity cm3/  
1000S.: 55.00...56.00

Shutoff  
electromagnet Volt: 12  
Dispersion cm3/: 4.0  
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500  
Del. quantity cm3/  
1000S.: 16.50...17.50

Shutoff  
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 325  
Del. quantity cm3/  
1000S.: 10.00...14.00

Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 6.0  
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 2100  
Charge press hPa: 1000  
Del. quantity cm3/  
1000S.: 19.50...25.50

Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm3/: 40.00...80.00  
mind 1000S.: 40.00

Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1300  
 Charge press hPa: 1000  
 Inj.-qty. cm<sup>3</sup>/  
 difference 1000s.: 22.00...30.00'  
 Shutoff  
 electromagnet Volt: 12  
 TD-travel dif.measurement  
 correttore anticipo iniezione (SV)  
 1.Speed 1/min: 1300  
 Charge press hPa: 1000  
 TD-travel  
 difference mm: 1.90...2.10'  
 Shutoff  
 electromagnet Volt: 12  
 SP press.-dif.measurement  
 pompa di mandata (FP)  
 1.Speed 1/min: 1300  
 Charge press hPa: 1000  
 Supply pump  
 pressure  
 difference bar: 0.10...0.30\*  
 Shutoff  
 electromagnet Volt: 12

Inspection-pump test specifications  
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1900  
 Charge press hPa: 1000  
 TD travel mm: 7.10...7.90  
 mm: (6.80...8.20)

Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1100  
 Charge press hPa: 1000  
 TD travel mm: 2.20...2.60  
 mm: (1.70...3.10)

Shutoff  
 electromagnet Volt: 12  
 4th speed 1/min: 900  
 Charge press hPa: 1000  
 TD travel mm: 0.60...1.40  
 mm: (0.30...1.70)

Shutoff  
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500  
 Charge press. hPa: 1000  
 Supply-pump  
 pressure bar: 3.60...4.20  
 Shutoff  
 electromagnet Volt: 12  
 2nd speed 1/min: 1100  
 Charge press. hPa: 1000  
 Supply-pump  
 pressure bar: 5.60...6.20

Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1900  
 Charge press. hPa: 1000  
 Supply-pump  
 pressure bar: 7.60...8.20  
 Shutoff  
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 41.70...83.40  
 quantity cm<sup>3</sup>/10s: (41.70...83.40)  
 2nd speed 1/min: 1900  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 55.60...139.00  
 quantity cm<sup>3</sup>/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800  
 Charge-air pressure-setting  
 point hPa: 400  
 LDA-stroke mm: 6.5\*  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 42.50...43.50  
 1000s.: (39.00...47.00)

2nd speed 1/min: 2350  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 0.00...5.00  
 1000s.: (0.00...5.00)

5th speed 1/min: 2100  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 19.50...25.50  
 1000s.: (18.00...27.00)

8th speed 1/min: 2000  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 40.00...48.00  
 1000s.: (38.00...50.00)

9th speed 1/min: 1900  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 51.00...56.00  
 1000s.: (50.00...57.00)

12th speed 1/min: 1750  
 Charge press. hPa: 1000

Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 55.00...56.00  
     1000S.: (52.00...59.00)  
 15th speed 1/min: 1500  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 52.50...57.50  
     1000S.: (51.00...59.00)  
 17th speed 1/min: 1000  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet volt: 12  
 Del. quantity cm3/: 49.50...54.50  
     1000H.: (48.00...56.00)  
 18th speed 1/min: 500  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 16.50...17.50  
     1000S.: (13.50...20.50)  
 20th speed 1/min: 500  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 47.00...56.00  
     1000S.: (46.00...57.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 325  
 Del. quantity cm3/: 0.00...3.00  
     1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 325  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 10.00...14.00  
     1000S.: (8.00...16.00)  
 Dispersion cm3/: 6.0  
     1000S.: (6.5)  
 2nd speed 1/min: 450  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 0.00...5.00  
     1000S.: (0.00...5.00)  
 5th speed 1/min: 250  
 Del. quantity cm3/: 33.00...43.00  
     1000S.: (32.00...44.00)

Load-dependent start of delivery:  
 Inj.-qty.dif.measurement:

2nd speed 1/min: 1300  
 Charge press. hPa: 1000

Inj.-qty. cm3/: 18.00...20.00\*  
 difference 1000S.: (18.00...20.00)  
 Shutoff  
 electromagnet Volt: 12  
 4th speed 1/min: 1300  
 Charge press. hPa: 1000  
 Inj.-qty. cm3/: 22.00...30.00'  
 difference 1000S.: (22.00...30.00)  
 Shutoff  
 electromagnet Volt: 12  
 5th speed 1/min: 1300  
 Charge press. hPa: 1000  
 Inj.-qty. cm3/: 2.00...8.00#  
 difference 1000S.: (2.00...8.00)  
 Shutoff  
 electromagnet Volt: 12  
 2nd speed 1/min: 1300  
 Charge press. hPa: 1000  
 TD-travel : 1.90...2.10'  
 difference mm: (1.90...2.10)  
 Shutoff  
 electromagnet Volt: 12  
 4th speed 1/min: 1300  
 Charge press. hPa: 1000  
 TD-travel : 2.00...2.80#  
 difference mm: (2.00...2.80)  
 2nd speed 1/min: 1300  
 Charge press. hPa: 1000  
 Supply pump-  
 pressure : 0.10...0.30\*  
 difference bar: (0.10...0.30)  
 Shutoff  
 electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.  
 terza fermo della portata  
 stop (EGR set)  
 scarico) (ARF)  
 gaz d'échappement-ARF)  
 Spacing mm: 12.0

1st speed 1/min: 1000  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 6.10...7.10  
     1000S.: (3.10...10.10)

Automatic starting fuel delivery:

1st speed 1/min: 300  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 50.00...80.00  
     1000S.: (50.00...80.00)

2nd speed 1/min: 400  
 Shutoff  
 electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 20.00...50.00  
1000S.: (20.00...50.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 40.00...80.00  
1000S.: (40.00...80.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: 3.2...3.4

KF mm: K-OT

MS mm: 0.6...1.0

SVS max. mm: 0.8

LDA stroke mm: 6.5

Ya mm: 32.0...36.0

Yb mm: 42.9...47.1

Ajustement Potentiometer:

Angle for

pot. °: 25

Supply voltage

pot. volt: 5.0

Output volt

pot. volt: 1.0

Operate control lever after each  
manifold-pressure compensator pressure  
change. :

\* Correction at adjusting nut

Ya = Distance between VE flange and  
speed-control lever in idle  
position

Measurement point = edge of control  
Lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position

Measurement point = edge of control  
Lever on distributor-head end

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR  
Edition : 05.94  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/11F2000R431-2  
Type number : 0 460 414 088  
Customer Part-No. :

Customer-specific information  
Customer : FORD

Engine : 2.5L DI MY 92

### TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil  
return temp. °C  
with thermometer : 44.00...46.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 023

Opening  
Pressure bar: 172.00...175.00

Perforated-plate  
diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: -  
(from BDC): -

Start of delivery block  
Piston stroke mm: 0.78  
mm: 0.73...0.83

Outlet : B

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250  
Setting value mm: 2.50...2.90  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250  
Setting value bar: 5.60....6.20  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 500  
Charge press. hPa: HBA  
Del. quantity cm<sup>3</sup>/  
1000S.: 30.5...31.5 "E"  
Shutoff  
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 35.5...36.5 "E"  
Shutoff  
electromagnet Volt: 12  
Dispersion cm<sup>3</sup>/: 3.0  
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 425  
Del. quantity cm<sup>3</sup>/  
1000S.: 16.00...20.00  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 3.0  
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2100  
Del. quantity cm<sup>3</sup>/  
1000S.: 30.50...34.50  
Shutoff  
electromagnet Volt: 12  
Dispersion cm<sup>3</sup>/: 3.0  
1000S.: (4.0)

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 62.00...102.00  
mind 1000S.: 62.00  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications

Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1950  
TD travel mm: 5.80...6.60  
mm: (5.50...6.90)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
TD travel mm: 2.50...2.90  
mm: (2.20...3.20)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 800  
TD travel mm: 0.40...1.20  
mm: (0.10...1.50)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Supply-pump  
pressure bar: 3.10...3.70

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1000

Supply-pump  
pressure bar: 4.80...5.40

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250

Supply-pump  
pressure bar: 5.60...6.20

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 1950

Supply-pump  
pressure bar: 7.70...8.30

Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Shutoff  
electromagnet Volt: 12

Overflow : 97.30...141.70  
quantity cm<sup>3</sup>/10s: (82.30...156.70)

2nd speed 1/min: 1950  
Shutoff  
electromagnet Volt: 12  
Overflow : 115.30...184.80  
quantity cm<sup>3</sup>/10s: (130.30...199.80)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2400

NO1

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: ...10.0  
1000S.: -

Shutoff  
electromagnet Volt: 12  
5th speed 1/min: 2200  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 18.00...26.00  
1000S.: (16.00...28.00)

8th speed 1/min: 2100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 30.50...36.50  
1000S.: (27.50...39.50)

9th speed 1/min: 1950  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 37.7...41.3 "D"  
1000S.: (37.0...42.0)

10th speed 1/min: 1700  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 38.70...42.30  
1000S.: (38.00...43.00)

11th speed 1/min: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35.5...36.5 "E"  
1000S.: (33.5...38.5)

12th speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 30.5...31.5 "F"  
1000S.: (28.0...34.0)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 425  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 16.00...20.0  
1000S.: (14.00...22.00)

Dispersion cm<sup>3</sup>/: 3.0  
1000S.: (4.0)

2nd speed 1/min: 500  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 5.00...13.00  
1000S.: (3.00...15.00)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 30.00...60.00  
1000S.: (30.00...60.00)

2nd speed 1/min: 480

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 24.00...34.00  
1000S.: (24.00...34.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 62.00...102.00  
1000S.: (62.00...102.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: 3.2...3.4

KF mm: KOT

MS mm: 1.3...1.7

SVS max. mm: 1.7

Ya mm: 42.8...45.8

Yb mm: 55.7...67.7

Remarks:

Ya = Distance between VE flange and  
speed-control lever in idle  
position

Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position

Measurement point = edge of control  
lever on distributor-head end

XK = 15.65...17.65 mm

XL = 10.90...14.30 mm

(For installation of part-load

NO2

governor 1 463 161 798 and engine-  
speed control lever 1 461 901 442).

Pump/engine assignment:

Stroke in blocking position 0.73...  
0.83 mm, referenced to outlet "B".

Attach timing-device cover

KDEP 1151.



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR  
Edition : 04.05.94  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/11F2000R415-3  
Type number : 0 460 414 107  
Customer Part-No. :

Customer-specific information  
Customer : FORD

Engine : 2.5 DI MARINE

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil  
return temp. °C  
with thermometer : 44.00...46.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 114

Opening  
Pressure bar: 207.00...210.00

Perforated-plate  
diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: -  
(from BDC): -

Start of delivery block  
Piston stroke mm: 0.31  
mm: 0.26...0.36

Outlet : B

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250  
Setting value mm: 4.80...5.00  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250  
Setting value bar: 6.30...6.90  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 500  
Charge press. hPa: HBA  
Del. quantity cm3/  
1000S.: 41.1...41.5 "F"

Shutoff  
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1000  
Del. quantity cm3/  
1000S.: 43.60...44.60

Shutoff  
electromagnet Volt: 12  
Dispersion cm3/: 3.0  
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 425  
Del. quantity cm3/  
1000S.: 10.00...12.00

Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 3.0  
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2200  
Del. quantity cm3/  
1000S.: 24.30...26.30

Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm3/: 65.00...105.00  
mind 1000S.: 65.00

Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000  
TD travel mm: 7.70...8.50  
mm: (7.40...8.80)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
TD travel mm: 4.80...5.00  
mm: (4.40...5.40)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 800  
TD travel mm: 2.20...3.00  
mm: (1.90...3.30)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2000  
Supply-pump pressure bar: 8.00...8.60

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1250  
Supply-pump pressure bar: 6.30...6.90

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1000  
Supply-pump pressure bar: 5.80...6.40

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 500  
Supply-pump pressure bar: 4.70...5.30

Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Overflow quantity cm<sup>3</sup>/10s: 97.20...113.80  
(82.20...128.80)  
2nd speed 1/min: 1950  
Shutoff  
electromagnet Volt: 12  
Overflow quantity cm<sup>3</sup>/10s: 115.20...184.70  
(100.20...199.70)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2400  
Shutoff  
electromagnet Volt: 12

NO4

Del. quantity cm<sup>3</sup>/: 0.00...5.00  
1000s.: (0.00...5.00)

5th speed 1/min: 2200  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 24.30...26.30  
1000s.: (20.30...30.30)

6th speed 1/min: 2100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 34.6...40.6  
1000s.: (31.6...43.6)

7th speed 1/min: 1950  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 44.2...46.6 "D"  
1000s.: (42.9...47.9)

8th speed 1/min: 1700  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 45.80...48.20  
1000s.: (44.50...49.50)

9th speed 1/min: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 43.6...45.6 "E"  
1000s.: (41.60...46.60)

10th speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 41.1...41.5 "F"  
1000s.: (38.3...44.3)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000s.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 425  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 10.00...12.00  
1000s.: (7.00...15.00)

Dispersion cm<sup>3</sup>/: 3.0  
1000s.: (4.0)

2nd speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...10.1  
1000s.: -

Part-load del. at 3rd inj.-qty.  
terza fermo della portata

stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)  
Spacing mm: 20.0

1st speed 1/min: 1250  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 10.7...11.7  
1000S.: (8.70...13.70)

Automatic starting fuel delivery:

1st speed 1/min: 300  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 66.00...96.00  
1000S.: (66.00...96.00)

2nd speed 1/min: 480  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 36.00...46.00  
1000S.: (36.00...46.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 65.00...105.00  
1000S.: (65.00...105.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 2.7...2.9  
KF mm: KOT  
MS mm: 1.6...2.0  
Ya mm: 42.8...45.8  
Yb mm: 63.0...76.0

Remarks:  
: FB = KDEP 1151  
:

Ya = Distance between VE flange and  
speed-control lever in idle  
position  
Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position  
Measurement point = edge of control

lever on distributor-head end

F = Adjustment point for low full-load  
delivery  
E = Fuel-delivery adjustment point in  
HBA range. (Correction by way of HBA  
adjusting screw).  
D = Adjustment point for high full-  
load delivery

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR  
Edition : 04.05.94  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/11F2000R567  
Type number : 0 460 414 108  
Customer Part-No. :

### Customer-specific information

Customer : FORD  
  
Engine : 2.5 DI  
  
Power KW: 57

### TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil  
return temp. °C  
with thermometer : 44.00...46.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 114

Opening  
Pressure bar: 207.00...210.00

Perforated-plate  
diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: -  
(from BDC): -

Start of delivery block  
Piston stroke mm: 0.52  
mm: 0.47...0.57  
Outlet : B

Injection-pump setting values  
Test specifications in parentheses

### Timing-device travel

Speed 1/min: 1250  
Setting value mm: 2.60...2.80  
Shutoff  
electromagnet Volt: 12

### Supply-pump pressure

Speed 1/min: 1250  
Setting value bar: 6.90...7.50  
Shutoff  
electromagnet Volt: 12

### Full-load del. with charge press.:

Speed 1/min: 500  
Charge press. nPa: HBA  
Del. quantity cm3/  
1000S.: 25.3...25.7 "F"  
Shutoff  
electromagnet Volt: 12

### Full-load del. w/out charge press.:

Speed 1/min: 1000  
Del. quantity cm3/  
1000S.: 33.5...34.5 "E"  
Shutoff  
electromagnet Volt: 12  
Dispersion cm3/: 3.0  
1000S.: (4.0)

### Low-idle speed regulation

Speed 1/min: 425  
Del. quantity cm3/  
1000S.: 6.00...8.00  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 3.0  
1000S.: (4.0)

### Full-load speed regulation

Speed 1/min: 2200  
Del. quantity cm3/  
1000S.: 22.00...24.00  
Shutoff  
electromagnet Volt: 12

### Start:

Speed 1/min: 100  
Del. quantity cm3/: 26.00...66.00  
mind 1000S.: 26.00  
Shutoff  
electromagnet Volt: 12

### Inspection-pump test specifications

# Test specifications in parentheses

## Timing-device characteristic:

2nd speed 1/min: 2000  
TD travel mm: 4.90...5.70  
mm: (4.60...6.00)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
TD travel mm: 2.60...2.80  
mm: (2.20...3.20)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 800  
TD travel mm: 0.50...1.30  
mm: (0.20...1.60)

Shutoff  
electromagnet Volt: 12

## Supply-pump pressure characteristic:

1st speed 1/min: 2000  
Supply-pump  
pressure bar: 8.60...9.20

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1250  
Supply-pump  
pressure bar: 6.90...7.50

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1000  
Supply-pump  
pressure bar: 6.40...7.10

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 500  
Supply-pump  
pressure bar: 5.20...5.80

Shutoff  
electromagnet Volt: 12

## Overflow quantity at overflow valve:

1st speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Overflow : 97.20...113.80  
quantity cm<sup>3</sup>/10s: (82.20...128.80)  
2nd speed 1/min: 1950  
Shutoff  
electromagnet Volt: 12  
Overflow : 115.20...184.70  
quantity cm<sup>3</sup>/10s: (100.20...199.70)

## Delivery-quant. and breakaway char.:

2nd speed 1/min: 2400

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Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...5.00  
1000S.: (0.00...5.00)

5th speed 1/min: 2200  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 22.00...24.00  
1000S.: (18.00...28.00)

6th speed 1/min: 2140  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 26.5...32.5  
1000S.: (23.5...35.5)

7th speed 1/min: 1950  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35.8...38.2 "D"  
1000S.: (34.5...39.5)

8th speed 1/min: 1700  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 36.30...38.70  
1000S.: (35.00...40.00)

9th speed 1/min: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 33.5...34.5 "E"  
1000S.: (31.50...36.50)

10th speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 25.3...25.7 "F"  
1000S.: (22.5...28.5)

## Mech. shutoff:

## Electr. shutoff:

1st speed 1/min: 425  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

## Idle delivery:

1st speed 1/min: 425  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 6.00...8.00  
1000S.: (3.00...11.00)

Dispersion cm<sup>3</sup>/: 3.0  
1000S.: (4.0)

2nd speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...6.0  
1000S.: -

Part-load del.at 3rd inj.-qty.  
terza fermo della portata  
stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)  
Spacing mm: 20.0

1st speed 1/min: 1250  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 20.8...21.8  
1000S.: (18.80...23.80)

Automatic starting fuel delivery:

1st speed 1/min: 300  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 26.00...56.00  
1000S.: (26.00...56.00)

2nd speed 1/min: 480  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 19.00...29.00  
1000S.: (19.00...29.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 26.00...66.00  
1000S.: (26.00...66.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 2.7...2.9  
KF mm: KOT  
MS mm: 1.6...2.0  
Ya mm: 42.8...45.8  
Yb mm: 59.5...71.5

Remarks:

: FB = KDEP 1151  
:

Ya = Distance between VE flange and  
speed-control lever in idle  
position  
Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed

position

Measurement point = edge of control  
lever on distributor-head end

F = Adjustment point for low full-load  
delivery

E = Fuel-delivery adjustment point in  
HBA range. (Correction by way of HBA  
adjusting screw).

D = Adjustment point for high full-  
load delivery

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF  
Edition : 04.05.94  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/11F2000R573  
Type number : 0 460 414 109  
Customer Part-No. :

Customer-specific information  
Customer : IVECO-SOFIM "DI"

Engine : 8140.07.3700

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil  
return temp. °C  
with thermometer : 44.00...46.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1600  
Setting value mm: 3.20...3.40  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100  
Setting value bar: 6.0...6.6  
Shutoff  
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1100  
Del. quantity cm3/  
1000S.: 47.50...48.50

Shutoff  
electromagnet Volt: 12  
Dispersion cm3/: 3.5  
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 350  
Del. quantity cm3/  
1000S.: 10.50...14.50

Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 3.0  
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 2200  
Del. quantity cm3/  
1000S.: 28.00...32.00

Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm3/: 40.00...80.00  
mind 1000S.: 40.00  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1800  
TD travel mm: 3.40...4.00  
mm: (3.00...4.40)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1600  
TD travel mm: 3.20...3.40  
mm: (2.60...4.00)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 1200

TD travel mm: 0.20...0.80  
mm: (0.00...1.20)

Shutoff

electromagnet Volt: 12

5th speed 1/min: 2000

TD travel mm: 4.20...4.80  
mm: (3.80...5.20)

Shutoff

electromagnet Volt: 12

9th speed 1/min: 500

TD travel mm: 1.80...3.20  
mm: (1.50...3.50)

Shutoff

electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500

Supply-pump pressure bar: 4.00...4.60

Shutoff

electromagnet Volt: 12

2nd speed 1/min: 1100

Supply-pump pressure bar: 6.00...6.60

Shutoff

electromagnet Volt: 12

3rd speed 1/min: 2000

Supply-pump pressure bar: 8.40...9.00

Shutoff

electromagnet Volt: 12

4th speed 1/min: 500

Supply-pump pressure bar: 7.00...8.00

Shutoff

electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500

Shutoff

electromagnet Volt: 12

Overflow quantity cm<sup>3</sup>/10s: 88.90...133.40  
(73.90...148.40)

2nd speed 1/min: 2000

Shutoff

electromagnet Volt: 12

Overflow quantity cm<sup>3</sup>/10s: 83.40...194.60  
(68.40...209.60)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2350

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

5th speed 1/min: 2200

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 28.00...32.00  
1000S.: (25.50...34.50)

8th speed 1/min: 2150

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 34.00...42.00  
1000S.: (32.00...44.00)

9th speed 1/min: 2000

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 44.50...49.50  
1000S.: (43.50...50.50)

10th speed 1/min: 1500

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 47.00...52.00  
1000S.: (46.00...53.00)

12th speed 1/min: 500

Shutoff

electromagnet Volt: 12

Del. quynity cm<sup>3</sup>/: 32.50...33.50  
1000S.: (29.50...36.50)

18th speed 1/min: 1100

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 47.50...48.50  
1000S.: (44.50...51.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 350

Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff

electromagnet volt: -

Idle delivery:

1st speed 1/min: 350

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 10.50...14.50  
1000S.: (8.50...16.50)

Dispersion cm<sup>3</sup>/: 3.0

1000S.: (6.5)

2nd speed 1/min: 450

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

3rd speed 1/min: 325

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 19.00...29.00  
1000S.: (18.00...30.00)



Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 55.00...95.00  
1000S.: (55.00...95.00)

2nd speed 1/min: 450

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 10.00...40.00  
1000S.: (10.00...40.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 40.00...80.00  
1000S.: (40.00...80.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: 3.4...3.6

KF mm: KOT

MS mm: 1.0...1.4

Ya mm: 36.9...41.9

Yb mm: 44.4...49.6

Remarks:

:

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position

Measurement point = edge of control  
lever on distributor-head end

Starting delivery check

V = Speed-control lever in full-load  
position

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : S0F  
Edition : 05.05.94  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/11F1900R522-1  
Type number : J 460 414 110  
Customer Part-No. :

Customer-specific information  
Customer : IVECO-SOFIM "DI"  
  
Engine : 8142.27.3800

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil  
return temp. °C  
with thermometer : 44.00...46.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400  
Charge press. hPa: 1200  
Setting value mm: 2.90...3.10

Supply-pump pressure

Speed 1/min: 1400  
Charge press hPa: 1200  
Setting value bar: 6.60...7.20

Full-load del. with charge press.:

Speed 1/min: 1750  
Charge press. hPa: 1200  
Del. quantity cm3/  
1000S.: 50.50...51.50  
Dispersion cm3/: 4.0  
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 550  
Del. quantity cm3/  
1000S.: 26.00...27.00

Low-idle speed regulation

Speed 1/min: 300  
Del. quantity cm3/  
1000S.: 8.00...12.00  
Del. quantity cm3/: 6.0  
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 2100  
Charge press hPa: 1200  
Del. quantity cm3/  
1000S.: 33.00...37.00

Start:

Speed 1/min: 100  
Del. quantity cm3/: 40.00...90.00  
mind 1000S.: 40.00

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1400  
Charge press hPa: 1200  
Inj.-qty. cm3/  
difference 1000S.: -18.0...-26.0 "  
TD-travel dif.measurement  
correttore anticipo iniezione (SV)  
1.Speed 1/min: 1400  
Charge press hPa: 1200  
TD-travel  
difference mm: -0.7...-0.9 "

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1750  
 Charge press hPa: 1200  
 TD travel mm: 5.30...5.90  
 mm: (4.90...6.30)  
 3rd speed 1/min: 1400  
 Charge press hPa: 1200  
 TD travel mm: 2.90...3.10  
 mm: (2.30...3.70)  
 4th speed 1/min: 1250  
 Charge press hPa: 1200  
 TD travel mm: 1.60...2.20  
 mm: (1.20...2.60)  
 5th speed 1/min: 1900  
 Charge press. hPa: 1200  
 TD travel mm: 5.30...5.90  
 mm: (4.90...6.30)

#### Supply-pump pressure characteristic:

1st speed 1/min: 800  
 Charge press. hPa: 1200  
 Supply-pump pressure bar: 3.80...4.40  
 2nd speed 1/min: 1400  
 Charge press. hPa: 1200  
 Supply-pump pressure bar: 6.60...7.20  
 3rd speed 1/min: 1900  
 Charge press. hPa: 1200  
 Supply-pump pressure bar: 8.70...9.30

#### Overflow quantity at overflow valve:

1st speed 1/min: 800  
 Charge press. hPa: 1200  
 Overflow : 75.00...119.50  
 quantity cm3/10s: (60.00...124.50)  
 2nd speed 1/min: 1900  
 Charge press. hPa: 1200  
 Overflow : 97.30...180.70  
 quantity cm3/10s: (82.30...195.70)

#### Delivery-quant. and breakaway char.:

1nd speed 1/min: 800\*  
 Charge-air pressure-setting point hPa: 600  
 LDA-stroke mm: 6.2  
 Del. quantity cm3/: 45.50...46.50  
 1000S.: (42.00...50.00)  
 2nd speed 1/min: 2300  
 Charge press. hPa: 1200  
 Del. quantity cm3/: 0.00...3.00  
 1000S.: (0.00...3.00)  
 5th speed 1/min: 2100  
 Charge press. hPa: 1200  
 Del. quantity cm3/: 33.00...37.00  
 1000S.: (30.50...39.50)

8th speed 1/min: 2000  
 Charge press. hPa: 1200  
 Del. quantity cm3/: 43.00...51.00  
 1000S.: (41.00...53.00)  
 9th speed 1/min: 1900  
 Charge press. hPa: 1200  
 Del. quantity cm3/: 48.50...53.50  
 1000S.: (47.50...54.50)  
 12th speed 1/min: 1750  
 Charge press. hPa: 1200  
 Del. quantity cm3/: 50.50...51.50  
 1000S.: (47.50...54.50)  
 15th speed 1/min: 1000  
 Charge press. hPa: 1200  
 Del. quantity cm3/: 45.00...50.00  
 1000S.: (43.50...51.50)  
 16th speed 1/min: 800  
 Charge press. hPa: -  
 Del. quantity cm3/: 26.50...31.50  
 1000H.: (25.50...32.50)  
 18th speed 1/min: 550  
 Charge press. hPa: -  
 Del. quantity cm3/: 26.00...27.00  
 1000S.: (23.00...30.00)  
 20th speed 1/min: 800  
 Charge press. hPa: 1200  
 Del. quantity cm3/: 45.50...54.50  
 1000S.: (44.50...55.50)

Mech. shutoff:  
 Mech. Abstellung:

1st speed 1/min: 1900  
 Del. quantity cm3/: 0.00...3.00  
 1000S.: (0.00...3.00)

#### Idle delivery:

1st speed 1/min: 300  
 Del. quantity cm3/: 8.00...12.00  
 1000S.: (6.00...14.00)  
 Dispersion cm3/: 6.0  
 1000S.: (6.5)  
 2nd speed 1/min: 425  
 Del. quantity cm3/: 0.00...3.00  
 1000S.: (0.00...3.00)

#### Load-dependent start of delivery: Inj.-qty.dif.measurement:

1st speed 1/min: 1400  
 Charge press. hPa: 1200  
 Inj.-qty. cm3/ : -19.0...-21.0#  
 difference 1000S.: -  
 2nd speed 1/min: 1400  
 Charge press. hPa: 1200  
 Inj.-qty. cm3/: 0.0...3.0 '2  
 difference 1000S.: -

#### TD-travel dif.measurement:

correttore anticipo iniezione (SV):  
1st speed 1/min: 1400  
Charge press. hPa: 1200  
TD-travel : -1.0...-1.8 '  
difference mm: -

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1400  
Charge press. hPa: 1200  
Supply pump-  
pressure : -0.1...-0.3 #  
difference bar: -

Automatic starting fuel delivery:

1st speed 1/min: 200  
Del. quantity cm<sup>3</sup>/: 55.00...105.00  
1000S.: (55.00...105.00)

2nd speed 1/min: 500  
Del. quantity cm<sup>3</sup>/: 14.00...30.00  
1000S.: (14.00...30.00)

4th speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 40.00...90.00  
1000S.: (40.00...90.00)

Mounting and assembly dimensions:

Designation

K	mm: VK
KF	mm: KOT
MS1	mm: 1.3...1.6
LDA stroke	mm: 6.2
Ya	mm: 37.9...39.9
Yb	mm: 44.3...50.1

Remarks:

:  
:

Ya = Distance between VE flange and  
speed-control lever in idle  
position

Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position

Measurement point = edge of control  
lever on distributor-head end

Operate control lever after each  
manifold-pressure compensator pressure  
change.

\* Correction at adjusting nut

Z = Absolute delivery

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : S0F  
Edition : 05.94  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/11F1900R521-1  
Type number : 0 460 414 112  
Customer Part-No. :

Customer-specific information  
Customer : IVECO-SOFIM

Engine : 8140.27.2560

### TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil  
return temp. °C  
with thermometer : 44.00...46.00  
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400  
Charge press. hPa: 1200  
Setting value mm: 2.60...2.80

Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1400  
Charge press hPa: 1200  
Setting value bar: 7.20...7.80  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1750  
Charge press. hPa: 1200  
Del. quantity cm3/  
1000S.: 47.50...48.50

Shutoff  
electromagnet Volt: 12  
Dispersion cm3/: 4.0  
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 550  
Del. quantity cm3/  
1000S.: 26.00...27.00

Shutoff  
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 300  
Del. quantity cm3/  
1000S.: 8.00...12.00

Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 6.0  
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 2100  
Charge press hPa: 1200  
Del. quantity cm3/  
1000S.: 33.00...37.00

Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm3/: 40.00...90.00  
mind 1000S.: 40.00  
Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1400  
 Charge press hPa: 1200  
 Inj.-qty. cm<sup>3</sup>/  
 difference 1000S.: -21.0...-27.0 #  
 Shutoff  
 electromagnet Volt: 12  
 TD-travel dif.measurement  
 correttore anticipo iniezione (SV)  
 1.Speed 1/min: 1400  
 Charge press hPa: 1200  
 TD-travel  
 difference mm: -0.7...-0.9 #  
 Shutoff  
 electromagnet Volt: 12

Inspection-pump test specifications  
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1750  
 Charge press hPa: 1200  
 TD travel mm: 4.70...5.30  
 mm: (4.30...5.70)

Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1400  
 Charge press hPa: 1200  
 TD travel mm: 2.60...2.80  
 mm: (2.00...3.40)

Shutoff  
 electromagnet Volt: 12  
 4th speed 1/min: 1250  
 Charge press hPa: 1200  
 TD travel mm: 1.30...1.90  
 mm: (0.90...2.30)

Shutoff  
 electromagnet Volt: 12  
 5th speed 1/min: 1900  
 Charge press. hPa: 1200  
 TD travel mm: 5.30...5.90  
 mm: (4.90...6.30)

Shutoff  
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800  
 Charge press. hPa: 1200  
 Supply-pump  
 pressure bar: 5.30...5.90

Shutoff  
 electromagnet Volt: 12  
 2nd speed 1/min: 1400  
 Charge press. hPa: 1200  
 Supply-pump  
 pressure bar: 7.20...7.80

Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1900

Charge press. hPa: 1200  
 Supply-pump  
 pressure bar: 8.70...9.30  
 Shutoff  
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 800  
 Charge press. hPa: 1200  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 75.00...119.00  
 quantity cm<sup>3</sup>/10s: (60.00...134.00)

2nd speed 1/min: 1900  
 Charge press. hPa: 1200  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 97.00...180.00  
 quantity cm<sup>3</sup>/10s: (82.00...195.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800\*  
 Charge-air pressure-setting  
 point hPa: 450  
 LDA-stroke mm: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 41.00...42.00  
 1000S.: (38.00...45.00)

2nd speed 1/min: 2300  
 Charge press. hPa: 1200  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)

5th speed 1/min: 2100  
 Charge press. hPa: 1200  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 33.00...37.00  
 1000S.: (30.50...39.50)

8th speed 1/min: 2000  
 Charge press. hPa: 1200  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 41.00...49.00  
 1000S.: (39.00...51.00)

9th speed 1/min: 1900  
 Charge press. hPa: 1200  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 45.50...50.50  
 1000S.: (44.50...51.50)

12th speed 1/min: 1750  
 Charge press. hPa: 1200  
 Shutoff  
 electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 47.50...48.50  
 1000S.: (44.50...51.50)  
 15th speed 1/min: 1000  
 Charge press. hPa: 1200  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 44.50...49.50  
 1000S.: (43.00...51.00)  
 16th speed 1/min: 800  
 Charge press. hPa: -  
 Shutoff  
 electromagnet volt: 12  
 Del. quantity cm<sup>3</sup>/: 26.00...31.00  
 1000H.: (25.00...32.00)  
 18th speed 1/min: 550  
 Charge press. hPa: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 26.00...27.00  
 1000S.: (23.00...30.00)  
 20th speed 1/min: 800  
 Charge press. hPa: 1200  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 44.50...53.50  
 1000S.: (43.50...54.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 300  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)  
 Shutoff  
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 300  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 8.00...12.00  
 1000S.: (6.00...14.00)  
 Dispersion cm<sup>3</sup>/: 6.0  
 1000S.: (6.5)  
 2nd speed 1/min: 425  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)

Load-dependent start of delivery:  
 Inj.-qty.dif.measurement:

1st speed 1/min: 1400  
 Charge press. hPa: 1200  
 Inj.-qty. cm<sup>3</sup>/: -21.0...-23.0"  
 difference 1000S.: (-21.0...-23.0)

Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1400  
 Charge press. hPa: 1200  
 Inj.-qty. cm<sup>3</sup>/: -21.0...-27.0#  
 difference 1000S.: (-20.0...-28.0)  
 Shutoff  
 electromagnet Volt: 12  
 5th speed 1/min: 1400  
 Charge press. hPa: 1200  
 Inj.-qty. cm<sup>3</sup>/: 0.00...3.00'  
 difference 1000S.: (0.00...3.00)  
 Shutoff  
 electromagnet Volt: 12

TD-travel dif.measurement:  
 correttore anticipo iniezione (SV):  
 1st speed 1/min: 1400  
 Charge press. hPa: 1200  
 TD-travel : -0.7...-0.9 #  
 difference mm: (-0.70...-0.90)  
 Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1400  
 Charge press. hPa: 1200  
 TD-travel : -1.0...-1.8 '  
 difference mm: (-1.00...-1.80)  
 Shutoff  
 electromagnet Volt: 12

SP press.-dif.measurement:  
 pompa di mandata (FP):  
 1st speed 1/min: 1400  
 Charge press. hPa: 1200  
 Supply pump-  
 pressure : -0.1...-0.3 "  
 difference bar: -  
 Shutoff  
 electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 200  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 55.00...105.00  
 1000S.: (55.00...105.00)

2nd speed 1/min: 500  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 14.00...30.00  
 1000S.: (14.00...30.00)

4th speed 1/min: 100  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 40.00...90.00  
 1000S.: (40.00...90.00)

### Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

### Mounting and assembly dimensions:

#### Designation

K	mm: -
KF	mm: K1
MS	mm: -
MS1	mm: 1.29-1.54
SVS max.	mm: -
XK	mm: 20.0...22.0
XL	mm: 15.0...18.4
Ya	mm: 37.9...39.9
Yb	mm: 44.9...50.7

#### Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

\* Correction at adjusting nut

Z = Absolute delivery

Pump with slave plunger

Ya = Distance between VE flange and speed-control lever in idle position

Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor-head end

Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!

Information additionally required for testing fuel-injection pump:

#### TEST PREREQUISITES

Calibrating-oil return temperature with thermometer, °C :45

Calibrating-oil inlet temperature, °C :35...40

Dwell speed, 1/min :1100  
Feedback voltage, mV :-

#### SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min :<500  
Temperature stabilisation speed 1/min :2100  
Output temperature, °C :51  
Measurement temperature, °C:49

Test speed, 1/min :500...799  
Temperature stabilisation speed 1/min :2100  
Output temperature, °C :48  
Measurement temperature, °C:46

Test speed, 1/min :800...1199  
Temperature stabilisation speed 1/min :2100/100  
Output temperature, °C :45  
Measurement temperature, °C:45

Test speed, 1/min :1200...1700  
Temperature stabilisation speed 1/min :100  
Output temperature, °C :42  
Measurement temperature, °C:44

Test speed, 1/min : 1700  
Temperature stabilisation speed 1/min :100  
Output temperature, °C :41  
Measurement temperature, °C:43



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR  
Edition : 05.05.94  
replaces : -  
Calibrating oil : ISO-4113  
Injection pump : VE4/11F2000R567-1  
Type number : 0 460 414 113  
Customer Part-No. :

Customer-specific information  
Customer : FORD

Engine : 2.5L DI (70 PS)

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil  
return temp. °C  
with thermometer : 44.00...46.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 114

Opening  
Pressure bar: 207.00...210.00

Perforated-plate  
diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: -  
(from BDC): -

Start of delivery block  
Piston stroke mm: 0.43  
mm: ±0.04(0.06)

Outlet : B

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250  
Setting value mm: 2.40...2.60  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1150  
Setting value bar: 7.10...7.70  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 500  
Del. quantity cm3/  
1000S.: 28.3...28.7 "F"

Shutoff  
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1150  
Del. quantity cm3/  
1000S.: 35.0...36.0 "E"

Shutoff  
electromagnet Volt: 12  
Dispersion cm3/: 3.0  
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 425  
Del. quantity cm3/  
1000S.: 6.00...8.00

Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 3.0  
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2200  
Del. quantity cm3/  
1000S.: 33.00...35.00

Shutoff  
electromagnet Volt: 12  
Dispersion cm3/: 3.0  
1000S.: (4.0)

Start:

Speed 1/min: 100  
Del. quantity cm3/: 30.00...70.00  
mind 1000S.: 30.00

Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

# Timing-device characteristic:

2nd speed 1/min: 2000  
TD travel mm: 5.60...6.40  
mm: (5.30...6.70)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
TD travel mm: 2.40...2.60  
mm: (2.00...3.00)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 900  
TD travel mm: 0.40...1.20  
mm: (0.10...1.50)

Shutoff  
electromagnet Volt: 12

# Supply-pump pressure characteristic:

1st speed 1/min: 500  
Supply-pump pressure bar: 5.40...6.00

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1150  
Supply-pump pressure bar: 6.90...7.50

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
Supply-pump pressure bar: 7.10...7.70

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 2000  
Supply-pump pressure bar: 8.70...9.30

Shutoff  
electromagnet Volt: 12

# Overflow quantity at overflow valve:

1st speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Overflow : 97.30...141.70  
quantity cm<sup>3</sup>/10s: (82.30...156.70)  
2nd speed 1/min: 1950  
Shutoff  
electromagnet Volt: 12  
Overflow : 115.30...184.80  
quantity cm<sup>3</sup>/10s: (100.30...199.80)

# Delive/y-quant. and breakaway char.:

2nd speed 1/min: 2400  
Shutoff

N20

electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...5.00  
1000S.: (0.00...5.00)

3rd speed 1/min: 2300  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 18.00...24.00  
1000S.: (15.00...27.00)

5th speed 1/min: 2200  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 33.00...35.00  
1000S.: (29.00...39.00)

9th speed 1/min: 1950  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 43.3...45.7 "D"  
1000S.: (42.00...47.00)

10th speed 1/min: 1700  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 40.30...42.70  
1000S.: (39.00...44.00)

12th speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 28.3...28.7 "F"  
1000S.: (25.50...31.50)

18th speed 1/min: 1150  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35.0...36.0 "E"  
1000S.: (33.00...38.00)

# Mech. shutoff:

# Electr. shutoff:

1st speed 1/min: 425  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

# Idle delivery:

1st speed 1/min: 425  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 6.00...8.00  
1000S.: (3.00...11.00)

Dispersion cm<sup>3</sup>/: 3.0  
1000S.: (4.0)

2nd speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...6.00  
1000S.: (0.00...6.00)

# Part-load del.at 3rd inj.-qty.

terza fermo della portata  
stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)  
Spacing mm: 20.0

1st speed 1/min: 1250  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 22.00...23.00  
1000S.: (20.00...25.00)

Automatic starting fuel delivery:

1st speed 1/min: 300  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 30.00...60.00  
1000S.: (30.00...60.00)

2nd speed 1/min: 480  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 25.00...35.00  
1000S.: (25.00...35.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 30.00...70.00  
1000S.: (30.00...70.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 2.7...2.9  
KF mm: KOT  
MS mm: 1.6...2.0  
Ya mm: 41.0...44.0  
Yb mm: 64.0...78.0

Remarks:

: FB: 0.43 MM  
: KDEP 1151

F = Adjustment point for low full-load  
delivery

E = Fuel-delivery adjustment point in  
HBA range. (Correction by way of HBA  
adjusting screw).

D = Adjustment point for high full-  
load delivery

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA  
Edition : 05.05.94  
replaces : 09.06.92  
Calibrating oil : ISO-4113

Injection pump : VES/11F1900L179  
Type number : 0 460 415 007  
Customer Part-No. :

Customer-specific information  
Customer : VM

Engine : HR 592 HTJ/9 MARINE

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.2  
(from BDC):  $\pm 0.02(0.04)$

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel

Speed 1/min: 1500  
Charge press. hPa: 1000  
Setting value mm: 4.90...5.30

## Supply-pump pressure

Speed 1/min: 1500

N22

Charge press hPa: 1000  
Setting value bar: 4.70...5.30

## Full-load del. with charge press.:

Speed 1/min: 1500  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 66.50...67.50  
Dispersion cm<sup>3</sup>/: 3.5  
1000S.: (3.5)

## Full-load del. w/out charge press.:

Speed 1/min: 600  
Del. quantity cm<sup>3</sup>/  
1000S.: 41.50...42.50

## Low-idle speed regulation

Speed 1/min: 420  
Del. quantity cm<sup>3</sup>/  
1000S.: 19.50...25.50  
Del. quantity cm<sup>3</sup>/: 3.5  
1000S.: (3.5)

## Full-load speed regulation

Speed 1/min: 2050  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 36.00...42.00

## Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 50.00...76.00  
mind 1000S.: 50.00

Inspection-pump test specifications  
Test specifications in parentheses

## Timing-device characteristic:

2nd speed 1/min: 1900  
Charge press hPa: 1000  
TD travel mm: 7.10...7.90  
mm: (6.70...8.30)  
3rd speed 1/min: 1500  
Charge press hPa: 1000  
TD travel mm: 4.90...5.30  
mm: (4.30...5.90)  
4th speed 1/min: 1000  
Charge press hPa: 1000  
TD travel mm: 1.50...2.30  
mm: (1.10...2.70)

## Supply-pump pressure characteristic:

1st speed 1/min: 1900

Charge press. hPa: 1000  
Supply-pump  
pressure bar: 6.00...6.60  
2nd speed 1/min: 1500  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 4.70...5.30  
3rd speed 1/min: 600  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 1.70...2.30

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Charge press. hPa: -  
Overflow : 41.70...86.10  
quantity cm<sup>3</sup>/10s: (26.70...101.10)  
2nd speed 1/min: 1900  
Charge press. hPa: 1000  
Overflow : 55.60...139.00  
quantity cm<sup>3</sup>/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700\*  
Charge-air pressure-setting  
point hPa: 300  
LDA-stroke mm: 4.5  
Del. quantity cm<sup>3</sup>/: 51.00...52.00  
1000S.: (49.00...54.00)  
5th speed 1/min: 2060  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 36.00...42.00  
1000S.: (34.00...44.00)  
9th speed 1/min: 1900  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 59.00...62.00  
1000S.: (58.30...62.70)  
12th speed 1/min: 1500  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 66.50...67.50  
1000S.: (65.00...69.00)  
18th speed 1/min: 600  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 41.50...42.50  
1000S.: (39.50...44.50)

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 1900  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Electr. shutoff:

1st speed 1/min: 420

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Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: 12

Idle delivery:

1st speed 1/min: 420  
Del. quantity cm<sup>3</sup>/: 19.50...25.50  
1000S.: (18.50...26.50)  
Dispersion cm<sup>3</sup>/: 3.5  
1000S.: (3.5)  
2nd speed 1/min: 650  
Del. quantity cm<sup>3</sup>/: 0.00...2.00  
1000S.: (0.00...2.00)  
3rd speed 1/min: 500  
Del. quantity cm<sup>3</sup>/: 13.00...21.00  
1000S.: (12.00...22.00)

Automatic starting fuel delivery:

1st speed 1/min: 280  
Del. quantity cm<sup>3</sup>/: 50.00...76.00  
1000S.: (50.00...76.00)

2nd speed 1/min: 380  
Del. quantity cm<sup>3</sup>/: 29.00...55.00  
1000S.: (29.00...55.00)

4th speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 50.00...76.00  
1000S.: (50.00...76.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: -  
KF mm: 5.8...6.2  
MS mm: 0.6...1.0  
SVS max. mm: 3.5  
LDA stroke mm: 4.5  
Ya mm: 37.2...39.2  
Yb mm: 50.5...55.5

Remarks:

Operate control lever after each  
manifold-pressure compensator pressure  
change.

\* Correction at adjusting nut

Y<sub>a</sub> = Distance between VE flange and  
speed-control lever in idle  
position  
Measurement point = edge of control  
lever on drive end

Y<sub>b</sub> = Distance between VE flange and  
speed-control lever in rated speed  
position  
Measurement point = edge of control  
lever on distributor-head end

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SNF  
Edition : 05.05.94  
replaces : 04.84  
Calibrating oil : ISO-4113

Injection pump : VE6/11F1150R92  
Type number : 0 460 416 020  
Customer Part-No. :

Customer-specific information  
Customer : SNF

Engine : WD 611.85

Power KW: 73

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.2  
(from BDC):  $\pm 0.02(0.04)$

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel

Speed 1/min: 1000  
Setting value mm: 5.30...5.70

## Supply-pump pressure

Speed 1/min: 1000

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Setting value bar: 6.20...6.80

Full-load del. w/out charge press.:

Speed 1/min: 800  
Del. quantity cm<sup>3</sup>/  
1000S.: 61.5...62.5  
Dispersion cm<sup>3</sup>/  
1000S.: (3,5)

## Low-idle speed regulation

Speed 1/min: 300  
Del. quantity cm<sup>3</sup>/  
1000S.: 14.00...18.00  
Del. quantity cm<sup>3</sup>/  
1000S.: (3.5)

## Full-load speed regulation

Speed 1/min: 1200  
Del. quantity cm<sup>3</sup>/  
1000S.: 25.50...29.50

## Start:

Speed 1/min: 100  
mind 1000S.: 55.00

Inspection-pump test specifications  
Test specifications in parentheses

## Timing-device characteristic:

2nd speed 1/min: 1150  
TD travel mm: 6.80...7.60  
mm: (6.50...7.90)  
3rd speed 1/min: 1000  
TD travel mm: 5.30...5.70  
mm: (4.80...6.20)  
4th speed 1/min: 700  
TD travel mm: 1.60...2.40  
mm: (1.30...2.70)

## Supply-pump pressure characteristic:

1st speed 1/min: 1150  
Supply-pump  
pressure bar: 7.00...7.60  
2nd speed 1/min: 1000  
Supply-pump  
pressure bar: 6.20...6.80  
3rd speed 1/min: 500  
Supply-pump  
pressure bar: 3.40...4.00

## Overflow quantity at overflow valve:

1st speed 1/min: 500

Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (26.70...98.40)  
2nd speed 1/min: 1100  
Overflow : 55.60...139.00  
quantity cm<sup>3</sup>/10s: (40.60...154.00)

Delivery quant. and breakaway char.:

2nd speed 1/min: 1300  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)  
3rd speed 1/min: 1250  
Del. quantity cm<sup>3</sup>/: 2.00...18.00  
1000S.: (2.00...18.00)  
5th speed 1/min: 1200  
Del. quantity cm<sup>3</sup>/: 25.50...29.50  
1000S.: (21.50...33.50)  
9th speed 1/min: 1100  
Del. quantity cm<sup>3</sup>/: 64.00...67.00  
1000S.: (63.00...68.00)  
12th speed 1/min: 800  
Del. quantity cm<sup>3</sup>/: 61.50...62.50  
1000S.: (59.70...64.30)  
20th speed 1/min: 500  
Del. quantity cm<sup>3</sup>/: 57.50...60.50  
1000S.: (56.50...61.50)

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 1100  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 300  
Del. quantity cm<sup>3</sup>/: 14.00...18.00  
1000S.: (12.00...20.00)  
Dispersion cm<sup>3</sup>/: 3.5  
1000S.: (3.5)  
2nd speed 1/min: 420  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)  
3rd speed 1/min: 350  
Del. quantity cm<sup>3</sup>/: 2.00...10.00  
1000S.: (2.00...10.00)

Automatic starting fuel delivery:

1st speed 1/min: 170  
Del. quantity cm<sup>3</sup>/: 65.00...125.00  
1000S.: (65.00...125.00)

2nd speed 1/min: 300  
Del. quantity cm<sup>3</sup>/: 28.00...52.00  
1000S.: (28.00...52.00)

4th speed 1/min: 100

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Del. quantity cm<sup>3</sup>/: 65.00...125.00  
1000S.: (55.00...115.00)

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.2...5.4
MS	mm: 1.3...1.5
SVS max.	mm: 6.0
Ya	mm: 37.2...39.2
Yb	mm: 46.2...54.8

Remarks:

:  
Ya = Distance between VE flange and  
speed-control lever in idle  
position  
Measurement point = edge of control  
lever on drive end

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position  
Measurement point = edge of control  
lever on distributor-head end